

Kew Bulletin

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REVIEW OF THE WORK OF THE ROYAL BOTANIC GARDENS, KEW, DURING 1953.

General

The Director was re-nominated by the Minister as Vice-Chairman of the Agricultural Improvement Council and by the President of the Royal Society as a Vice-President of that body.

On the 23rd April, the Director opened the new Biological Laboratories at the University College of the S.W. at Exeter, and delivered an Address on the subject of "the Place of Biology in the University Curriculum". The Director was the Guest of Honour and speaker at the Colston Society's Dinner at Bristol on March 25th in connection with the Commonwealth symposium on plant protection organised by that Society.

The Royal Horticultural Society invited the Director to organise a Commonwealth Exhibit at the Chelsea Show in May. This he consented to do, and the Exhibit, for which a special tent was provided, consisted of groups respectively representative of the floras of the various Dominions and Colonies. Great Britain itself, having no endemic or highly characteristic species of horticultural interest, was represented by a woodland glade as exemplifying its most characteristic type of vegetation. The Director was indebted to overseas Governments and officials for contributing material and for other assistance. To them and to all the Garden Staff concerned is due the credit for what was acclaimed as a most successful and instructive exhibit. A brief account was published in the Royal Horticultural Society's Journal.

At the Annual Meeting of the Royal Horticultural Society, the Director was re-elected a Vice-President, and on the same occasion was presented with the Victoria Medal of Honour by the late Lord Aberconway. By the passing of Lord Aberconway, Kew has lost a valued friend, but we welcome as his successor another friend, the Hon. David Bowes-Lyon, whose associations with the Royal Botanic Gardens are, perhaps, even closer.

The Centenary of the Herbarium and Library, was celebrated on the 8th and 9th of May, when an exhibition, illustrating the history of the work in these Departments during the past hundred years, was arranged.

A large number of visitors availed themselves of the invitation to attend, and numerous messages of congratulation on the event, and appreciation of the work of Kew, were received, both from at home and overseas.

On June 2nd, the Director represented The Royal Society in Westminster Abbey at the Coronation Service.

Plans for the rebuilding of the Palm House are under consideration, and in the autumn the Minister of Works announced that the Coronation Arches from the Mall would be utilised in its reconstruction. The problems arising from the necessity for rehousing the present contents of the Palm House, whilst its successor is being built, will be no easy task to overcome.

The Herbarium

Some aspects of the normal activities during 1953 are statistically indicated by the following figures :—

Specimens received for the Herbarium, excluding those prepared at Kew from living material, 60,496 ; sheets received on loan, 4,558 ; sheets sent on loan, 4,446 ; sheets distributed as duplicates, 12,268 ; sheets mounted, excluding Algae, Fungi, and Bryophyta, and specimens received already mounted, 46,465. A method of using plastic mountant instead of paper straps was tested in April and is now generally adopted.

Laying in has, in all departments, approximately kept pace with the number of sheets mounted.

Visits by botanists numbered 3,964, excluding all visits during the centenary celebrations. More overseas botanists worked in the Herbarium during 1953 than in 1952, some of them for extended periods.

A number of evening lectures, illustrated by slides or films were given by visiting botanists or by members of the Staff. They have been so much appreciated that others have been arranged.

During the year a total of 2,667 enquiries and plant consignments has been dealt with. Many of these involved the expenditure of much time and frequently botanical, nomenclatural, or literary research.

The Keeper, Dr. W. B. Turrill, served on various scientific committees and also gave lectures to societies, including one on "The Geography of Plants" to the Horticultural Education Society, one on "Experimental Taxonomy as a research subject for young students" to the Institute of Biology, and several on the history and work of Kew. On 28 May he unveiled a memorial plaque to the Blenheim Orange Apple at Woodstock, Oxfordshire.

Members of the scientific staff continue to be indebted to Mr. W. C. Worsdell for assistance in translation from various foreign languages and to Miss M. M. Whiting who has again rendered valuable help in a voluntary capacity in re-arranging specimens and drawings of plants from Tropical Asia.

Centenary Exhibition.

The exhibition to celebrate the foundation of the Herbarium, referred to previously, illustrated, in a diversity of ways, the history of systematic botany at Kew, the growth of research during the century, and the very large number of important publications by which the results of researches

were made available to botanists and, often, to a wider public. Every member of the staff co-operated in preparing and demonstrating the series of forty six exhibits in the Herbarium and ten in the Library. During the three days of the exhibition 770 visitors attended. General introductions to the Exhibition were given by the Director and the Keeper and teas were served in the Preparers' Hut.

As a permanent record of the Centenary and of the exhibits, a brochure was printed and distributed to visitors and to botanical institutions in this country and abroad. An account was also published in *Nature* **171** : 1086-7 (20 June 1953).

Europe, Orient, and N. Africa. Much of the time of members of this department continues to be occupied with the routine task of replying to an ever-increasing number of inquiries concerning the wild and cultivated plants of Europe and the Orient. In addition to this day-to-day work, the following long-term projects have been continued or completed.

Mr. R. D. Meikle has finished a survey of the flora of Chios, which is in press at the time of writing, and should appear early in 1954.

Mr. R. A. Blakelock continues his work on the flora of 'Iraq ; part VII of his account of the Rustam herbarium is now in press. In addition, he has identified the extensive collectings made by Dr. H. F. Mooney in the Lebanon, Syria, and Jordan.

Part III of the Flora of Kuwait is now being completed by Miss P. Lewis and should be ready for publication in the near future. Miss Lewis has also determined collections forwarded by Dr. C. N. Goulimy (Greece) ; Mr. G. Popov (Tropical Arabia) ; Dr. C. H. Gimmingham (Cyrenaica), and Dr. D. P. Young (Denmark).

Miss I. Blewett continues to assist with the heavy routine curatorial work of the Department ; large parts of the extensive Thomas Birch Wolfe (European) and Dr. P. H. Davis (Turkish) collections have now been mounted and are being incorporated into the general collection.

The National *Dianthus* Collection, under the supervision of Miss P. Rawdon, expands yearly. More than fifty identified species are now in cultivation, and the Experimental Ground beds have been re-organized to make the collection more accessible. *Dianthus* seed from native localities in E. Europe and Asia Minor is still urgently wanted, and travellers or collectors in these parts are cordially invited to send their collectings to Kew.

Miss Rawdon continued to revise and re-arrange the herbarium material of *Dianthus* at Kew.

Mr. R. C. Carolin has examined cytologically about forty species of *Dianthus* in cultivation at Kew, and has undertaken hybridization experiments with *Dianthus* sect. *Carthusianorum* and sect. *Suffruticosi* ; he is also preparing a detailed analysis of the variation found within the *Carthusianorum* complex.

Several valuable collections, in addition to those mentioned above, have been received by the Department in the course of the year. Dr. P. H. Davis continues to add to the importance of the Turkish collections, and valuable Oriental material has also been sent by Mrs. E. W. Kennedy and Mr. F. Merton (Cyprus) and Dr. H. F. Mooney (Middle East).

British and European specimens have been kindly communicated by Mr. J. P. M. Brenan ; Dr. R. W. G. Dennis ; Mr. F. N. Hepper ; Miss P. Lewis ; Mr. J. E. Lousley ; Dr. W. B. Turrill ; and Dr. D. P. Young.

Tropical Asia. Material mounted and incorporated into the herbarium during the year included the remaining specimens from the Oxford University Expedition (1932) to Sarawak. Some of these specimens have only received preliminary naming. Mounting of the pre-war collections by the North Borneo Forestry Department has been resumed, and miscellaneous collections from New Guinea have been mounted and incorporated after being named. Over 3,600 duplicates, mostly from the above collections, have been extracted and dispatched.

The following have sent collections from Tropical Asia :—Herbarium Bogoriense (1,935 duplicates from Indonesia) ; Forestry Department, Lae (New Guinea) ; North Borneo Forestry Department ; Rev. N. E. G. Cruttwell (New Guinea) ; Mr. H. B. Garrett (Thailand) ; Dr. R. Melville (Malay Peninsula) ; Mr. T. Smitinand (Thailand) ; Mr. E. C. Wallace (Burma).

Routine naming of some of these collections has been carried out, and the enquiries dealt with included some from India. Work has commenced on a study of the *Menispermaceae* of Malaysia.

Mr. T. Smitinand from the Royal Forests Department, Bangkok, worked at Kew for several months on his collections from Thailand.

Professor C. G. G. J. van Steenis and Dr. H. Sleumer visited Kew in connection with their work for "Flora Malesiana." Extensive loans were sent to Leiden and other institutions for workers on this Flora.

Northern Asia, China, Japan, Northern India. Steady progress has been made with the selection and incorporation into the Kew collections of material from the Hongkong and Greatrex herbaria. Small collections of specimens from Japan and the U.S.S.R., received in exchange, have been mounted and laid in. A considerable amount of time has been given to general curatorial work and the naming of miscellaneous specimens left over from collections dealt with in past years.

Tropical Africa. The main energies of the staff have again been concentrated on the preparation of the "Flora of Tropical East Africa". The accounts of *Hypericaceae*, *Onagraceae*, *Pedaliaceae*, and *Trapaceae* appeared during the year and those of many other families have been started, including the *Leguminosae*, which it is estimated will contain about 1,000 species. The rate of routine naming has again been lower than in previous years owing partly to the number of botanists who are doing research for the Flora and partly to the absence of two members of the staff on a collecting expedition in East Africa during the greater part of the year.

Collections continue to be received from numerous correspondents in Africa, and a very high standard of preservation and annotation is being maintained. Of these collections, the more important have been made by the following :—F. C. Deighton, T. S. Jones, H. D. Jordan, D. Small (Sierra Leone) ; A. J. D. Barker (Liberia) ; J. E. Andoh (Gold Coast) ; T. A. Russell, H. J. Savory and various collectors through the Forestry

Herbarium, Ibadan (Nigeria) ; H. Callens (Belgian Congo) ; J. K. Jackson (Anglo-Egyptian Sudan) ; H. F. Mooney, Hugh Scott (Ethiopia) ; C. F. Hemming (Somalia), R. J. Chancellor, H. C. Dawkins, Miss E. M. Lind, Mrs. E. M. Norman, G. H. S. Wood (Uganda) ; P. R. O. Bally, A. Bogdan, P. J. Greenway, S. H. Padwa, Mrs. D. R. Tweedie (Kenya) ; W. J. Eggeling, Mrs. H. G. Faulkner, R. E. S. Tanner and various collectors through the Forestry Herbarium, Morogoro (Tanganyika) ; R. O. Williams (Zanzibar) ; A. de F. Gomes e Sousa (Portuguese East Africa) ; G. Jackson (Nyasaland) ; H. Wild and various collectors through the Government Herbarium, Salisbury (Southern Rhodesia) ; D. B. Fanshawe, E. A. Robinson (Northern Rhodesia). Small collections, also of a high standard and very acceptable, have been received from other correspondents, but space will not permit the mention of them by name.

Our collections, mainly from territories other than those of the Commonwealth, have been strengthened by most excellent sets of duplicates received in exchange from the Jardin Botanique, Brussels, Botanischer Garten und Museum, Berlin-Dahlem, the Centro de Botanica da Junta de Investigacoes, Lisbon, the Jardin e Museum Agricola do Ultramar, Lisbon, I.N.E.A.C., Yangambi, the Instituto Botanica della Universita, Florence, the East African Herbarium, Nairobi, and the Imperial Forestry Institute, Oxford. A fine set of nearly 700 specimens collected by Mrs. M. V. Loveridge in eastern tropical Africa was presented for naming by the Arnold Arboretum. Some most valuable duplicates were received from M. H. Jacques-Félix, whilst Prof. P. Jaeger presented some specimens of rare and little known species mainly from the Loma Mts. in Sierra Leone.

Having spent just over one year in northern Kenya and southern Ethiopia, Mr. J. B. Gillett returned to Kew in March with a very fine collection rich in duplicate material. His gatherings will add many rare species to the Kew collections and contain some that hitherto have been undescribed, whilst the known floras of both Kenya and Ethiopia will be considerably enriched thereby. Our thanks are due to Col. E. H. M. Clifford, O.B.E., M.C., and the members of the Kenya-Ethiopia Boundary Commission who made possible this expedition.

In January, Mr. R. B. Drummond and Mr. J. H. Hemsley left Kew for East Africa where they made a very fine collection of about 3,800 gatherings with plentiful duplicate material. They obtained many rare or little known species from localities visited earlier in the century by German collectors in Tanganyika and from south-eastern Kenya, whilst they also visited the swamp forests of Buddu in Uganda. They returned to Kew in October after nearly nine months in the field. The success of their expedition was assured by the helpful cooperation of Mr. P. J. Greenway and the staff of the East African Herbarium, by Dr. W. J. Eggeling and members of the Forestry Department staff, by Major and Mrs. Faulkner, and Mr. H. C. Dawkins. The expedition was financed out of the Colonial Office Development and Welfare Research Scheme for the "Flora of Tropical East Africa".

During 1953 the team of Botanists appointed by the Colonial Office to work on the "Flora of Tropical East Africa" was completed by the appointment of Miss J. Elffers in March. Mr. F. N. Hepper, having

completed his National Service, joined the Section in February, filling the place left open by Mr. R. D. Meikle's transfer to the European Section two years earlier. Mr. Hepper is working mainly on West Africa, where he is able to assist Mr. R. W. J. Keay. The part time services of Miss J. I. Morris were lost to the Section during the year, but Miss S. Patten took over the whole-time duties of Assistant (Scientific) in her stead. Miss E. M. Stones and Miss A. V. Webster have continued to prepare plates of a high standard for the "Flora of Tropical East Africa" and the former also for the revised edition of the "Flora of West Tropical Africa".

During the year many visitors working on problems relating to tropical Africa were at Kew, including Mr. C. D. Adams, Mlle. S. Balle, Prof. A. S. Boughey, Mlle. N. Dumas-le-Grand, Prof. P. Duvigneaud, Miss M. E. Griffiths, Prof. E. Guinea, Prof. L. Hauman, Mr. G. Jackson, Mr. J. K. Jackson, Dr. J. Léonard, Dr. F. A. Mendonça, Mr. J. K. Morton, Prof. R. Pichi-Sermolli, Mr. T. A. Russell, Dr. R. Schnell, Prof. K. Suessenguth, and Dr. A. R. Rocha da Torre. Dr. O. Hedberg continued throughout the year his researches on the high mountain flora of East Africa, whilst Mr. I. H. Burkill spent much time working on the African species of *Dioscorea*. Mr. B. Mikula continued the work of photographing African types at Kew for the Missouri Botanic Garden.

Our thanks are again due to the following correspondents who have most kindly determined tropical African specimens for us:—Mr. A. Angus, Dr. C. E. B. Bremekamp, Mr. J. E. Dandy, Mr. A. C. Hoyle, Dr. K. H. Rechinger, Prof. K. Suessenguth, Dr. G. Taylor, Mr. B. Verdcourt, Mr. F. White, and Dr. F. E. Wimmer.

The revision of Hutchinson and Dalziel's "Flora of West Tropical Africa" has been continued by Mr. R. W. J. Keay, and the first part of volume I is now in the press. The task of proof-reading has, unfortunately, reduced the time available for the revisional work, and researches have been found necessary in some most unexpected places, so that Mr. Keay has been unable to progress at the pace originally estimated. Good progress has, however, been made by him with the second part and Mr. A. H. G. Alston has almost completed the part dealing with *Pteridophyta*.

Mr. J. P. M. Brenan has continued to act as Secretary to A.E.T.F.A.T. throughout the year and together with Mr. A. C. Hoyle was responsible for organising a most successful Second Plenary Meeting at Oxford in September, an account of which can be seen in *Nature* **172**, 987 : 1953. During the year a further Bulletin was issued to members, and an account of the papers read at the First Plenary Meeting at Brussels was distributed in September through the generosity of Prof. P. Duvigneaud of Brussels University.

South Africa. Progress in incorporating the large named collections which continue to arrive from the South African herbaria has been maintained and thanks are due particularly to Dr. L. Bolus (Capetown) and Dr. R. A. Dyer (Pretoria) for their constant care to ensure that duplicates of rare and new species are deposited at Kew. Somewhat fewer requests for specimens to be sent on loan have been received.

Work on the revision of the genera *Eragrostis* (*Gramineae*) and *Euclea* (*Ebenaceae*) has continued and in connection with this and other work

Mr. B. de Winter spent several weeks in October and November visiting the continental herbaria. Numerous miscellaneous queries, largely from the Division of Botany, Pretoria, were received and these involved the expenditure of much time and labour. They included questions in regard to *Convolvulaceae* and *Oleaceae*, families now in course of preparation for the continuation of the late Dr. Burt Davy's "Manual." Mr. de Winter has also commenced a collection of photographs of type specimens and wherever possible a specially selected specimen from the National Herbarium, Pretoria has been compared with type specimens. Many of these photographs and comparisons were made in Berlin, Vienna and Geneva.

America. During the year most of the outstanding collections from West Tropical South America were finally incorporated. These include the Sandeman and Stafford collections from Peru, those of Mr. J. Hanbury-Tracy from Colombia and Venezuela, and the late Sir Thomas Taylor's collection on the Galapagos Islands. Several consignments of specimens from Trinidad, sent by I.C.T.A., have been identified. The College also presented to Kew a considerable series of sheets from the Trinidad Herbarium which were not required there since the specimens were collected on other West Indian Islands. They included valuable sheets of W. E. Broadway's plants from Grenada, and a small set of the historic collection of H. J. Krebs on St. Thomas. Most of these specimens have been dealt with.

Special work. The account of *Bignoniaceae* for the "Flora of Trinidad and Tobago" was completed, and the draft was sent to Trinidad. Loans or gifts of specimens of this family from the New York Botanical Garden, the Colombian National Herbarium, the Instituto Agronomico do Norte (Belém, Pará), and other collections, have been studied. A consignment of specimens of *Diospyros*, sent by the Instituto Agronomica do Norte, was also identified.

Australasia. The routine work of the department was carried on by Miss P. Lewis during Dr. R. Melville's absence in Australia. Naming and incorporation in the herbarium of the Morrison collection of Western Australian plants continued, the *Myoporaceae*, *Labiatae*, *Malvaceae*, *Sterculiaceae* and *Rutaceae* being dealt with.

Some noteworthy collections of Australian plants were received during the year, among them 1,350 specimens gathered by Mr. R. L. Specht on the National Geographic Society of America and Commonwealth Government of Australia Expedition and the Arnhemland Aboriginal Reserve and 451 specimens obtained by Mr. R. A. Perry in northern parts of Australia which have added appreciably to our knowledge of some botanically little known parts of the Continent. A representative collection of the flora of the Montebello Islands made before the atomic explosion, consisting of 150 specimens, and a further 37 specimens obtained a year later were received from Mr. F. L. Hill. The Islands are without a permanent water supply and were avoided by early navigators and plant explorers; this collection is the first to be received from the group. The National Herbarium at Sydney presented 1,391 duplicates of New South Wales plants which included several isotypes and much valuable material of critical genera. We are indebted also to Mr.

A. C. Smith of the Arnold Arboretum for a representative collection of 2,503 plants from Fiji.

At the end of September, Dr. R. Melville returned from Australia, having spent a year attached to the Melbourne Botanic Gardens and National Herbarium. During this period he travelled about 1,600 miles in the continent observing the flora, taking photographs and making collections totalling 4,494, the majority of which were in quintuplicate. All the principal Australian herbaria were visited and the 1952 Sydney meeting of the Australian and New Zealand Association for the Advancement of Science was attended and a paper was read on "A biometrical approach to some taxonomic problems". Grateful acknowledgment is made to the Maud Gibson Trust of the Melbourne Botanic Gardens, who defrayed the travelling expenses.

Orchidaceae. Routine determination of living plants from the Gardens and from many orchid growers as well as of collections from many parts of the world were carried out as in previous years. Further progress was made in the naming of numerous African collections including many on loan from other institutions.

Research work was carried out on orchids from many parts of Africa. Work was also continued on the new edition of the "Flora of West Tropical Africa" and a number of extensive studies were made of East African orchids belonging to various groups.

Gramineae. As in previous years, much of the botanist's time has been spent in naming numerous specimens mainly presented to Kew by overseas herbaria or agricultural departments. African grasses form the bulk of this material, including extensive collections from most parts of the Continent. Among other collections worthy of special mention are fine series of specimens from the countries of the Near East, from Australia, India, Japan and America. Many of these were of considerable value on account of the excellence of the material, the wide range of species present from regions previously poorly or not represented at Kew, and in several because of the presence of iso-types.

The preparation of the account of the family for the "Flora of Tropical East Africa" has proceeded as speedily as other duties would permit, and whenever possible an account of the genera concerned has been drawn up for the "Flora of Tropical Africa." Several small papers dealing with new species or generic re-arrangements have been added to a series for the next number of Notes on African Grasses. Reports and advice have been given to correspondents and many visitors on various problems connected with the *Gramineae*, such as their taxonomy and nomenclature, structure, distribution, references to literature, economic uses, cereals, lawn-grasses, and sources of seed and plant supply. All the material mounted during and since the war has been sorted into genera, and a very large number of specimens has been incorporated in the Herbarium. Several genera have been revised and their species sorted into smaller geographical divisions.

Cyperaceae. The botanist in charge of this group became ill in April 1953 and is only now, at the end of the year, slowly recovering. In conse-

quence, both the preparation of the account of the family for the "Flora of Tropical East Africa" and the naming of important collections got into arrears. These, so far as the determination of collections is concerned, have now been dealt with, and it is hoped that most of the official time in 1954 will be spent on the Flora in order to make up for that lost in 1953.

The study of the whole of the remarkable African genus *Coleochloa*, which was necessary for the understanding of the two species of this genus included in the Flora area, was completed and published. To the same end the elucidation of the African species of *Hypolytrum* was continued.

Vascular Cryptogams. The year's work was largely devoted to the study of Tropical African ferns in addition to normal routine naming and reporting. No large collections were received during the year though material collected by members of the herbarium staff in Africa and Australia in 1953 has proved of interest.

Curatorial work has included the making of several specific indexes and the rearrangement of some of the larger aggregate genera of Hooker and Baker into more natural units.

Visitors working on ferns during 1953 included Prof. R. Pichi-Sermolli (Ethiopian ferns), Mr. Boughton Cobb (North American ferns) and Dr. W. A. Sledge and Mr. G. Panigrahi (Ceylon ferns).

Bryophyta. A start has been made on the re-arrangement of the moss herbarium according to the classification of Brotherus in Engler and Prantl, Nat. Pflanzenfam. ed. II, 10 & 11 (1924-1925), emended by the addition of some 115 genera described during the last 28 years. Two valuable collections, Sherrin's British Sphagna and Dixon's British Mosses are not being incorporated but will remain arranged according to the classification of the respective Handbooks of which they form the basis. The Dixon collection has been remounted—this was necessary owing to the many specimens which had become detached and were thus in danger of being separated from the relevant manuscript notes.

Routine indexing, naming and laying-in has continued. We are especially grateful to Prof. R. van der Wijk and Dr. W. D. Margadant, both of the Flora Malesiana Foundation, who spent some time at Kew in the autumn and enabled us to complete the naming of accumulated material from the "Malesiana" region. Thus the rich and valuable Kerr collection from New Guinea has at last been named and incorporated.

Among the collections presented to Kew in 1953 that of W. West is especially noteworthy. Presented by Birmingham University it comprises over 7,000 European gatherings. Other valuable additions as yet unnamed are Dr. Melville's collection from Australia and that of Dr. P. H. Davis from Turkey.

Fungi. The study of West Indian Gasteromycetes cited in last year's report has been concluded and considerable progress made on a revision of the inoperculate Discomycetes of tropical America. Some attention has also been given to the Discomycetes of South Africa and the assistant mycologist has undertaken a revision of the stipitate species of *Stereum*. The entire Kew collection of *Meliola* and allied genera, amounting to 476

sheets, has been revised by Dr. C. G. Hansford who has prepared representative slides of each by the Necol film method. These have been deposited in the herbarium and form a valuable reference collection. The general slide collection, amounting to some 3,000 items, has been rearranged and catalogued. All persons studying types of microfungi preserved at Kew are now required to deposit a representative slide in this collection.

Accessions during the year include a set of 200 Japanese Uredineae, obtained by exchange with Prof. Hiratsuka, and large collections of Aphyllophorales from Panama, Colombia, Pakistan and Western Australia.

Dr. H. J. Brodie has presented a small but representative set of 34 *Nidulariaceae* and Dr. Sultan Ahmad has kindly given us material of the numerous species of *Tulostoma* in the Punjab, formerly unrepresented at Kew.

Dr. A. P. L. Digilio returned to Argentina in June. Shorter visits for specialised studies have been made by Dr. S. J. Hughes, Ottawa (*Hyphomycetes*), Dr. A. E. Texeira, São Paulo (Polypores) and Dr. A. J. Mix, Kansas (*Taphrina*).

The assistant mycologist attended officially the autumn foray of the British Mycological Society at Dunkeld. Assistance was also given during the autumn to fungus forays of local societies in Hampshire, Surrey, Buckinghamshire and Bedfordshire.

Algae. In addition to the normal curatorial duties and the routine work of replying to a wide variety of enquiries from correspondents, an investigation is being made of the genus *Eucheuma* of which several species are of economic importance. From time to time specimens are received for determination and particularly valuable material has recently been forwarded from Zanzibar through the courtesy of the Colonial Advisory Bureau. The Director of the Rijksherbarium at Leiden has kindly loaned several types and this has helped to elucidate some of the taxonomic problems in this difficult genus.

Algae received from the Marine Laboratory at Plymouth included 54 sheets from the collection of H. H. Sturch presented by the Director, 37 sheets of Australian Algae presented by Dr. M. Parke, and 15 sheets of American and New Zealand Algae presented by Mrs. D. P. Wilson. Amongst other specimens received are a valuable set of *Sargassum* species from Miss B. Chiu, 54 sheets collected by Messrs. R. B. Drummond and J. H. Hemsley in East Africa and 154 sheets collected by Dr. R. Melville in Australia. Other acquisitions include small collections from the Galapagos Islands, Eritrea, and the Monte Bello Islands.

British material presented to the herbarium includes 132 specimens collected by Miss C. I. Dickinson and a total of 83 specimens collected by Dr. R. W. G. Dennis, Mr. R. D. Meikle, Miss J. Taylor and Mr. D. A. Reid.

A number of algologists have paid visits to the herbarium in connection with the projected handbook of British Marine Algae. Miss B. Chiu, a lecturer in Hong Kong University spent a few weeks of her vacation in working through the genus *Sargassum*. Mr. H. B. Womersley returned to Kew for a week following his tour of continental herbaria.

Spirit Collection. Additions to the collections during the year were substantially the same as last year, that is, about 1,000 bottles. These included especially material of African plants, of which the *Orchidaceae*, *Acanthaceae* and *Cucurbitaceae* formed an important proportion. Rearrangement of part of the collection was carried out in order to provide additional storage space.

Carpological Collection. Additions, chiefly from the rich collections from Africa, have been considerable.

Fumigation Apparatus. The large hydrogen cyanide chamber, being due for a major overhaul, was suspended from active use in January 1953. The smaller methyl bromide apparatus had therefore to be used almost daily for several months and 134 separate fumigations were carried out with it during the year. The overhauling of the larger chamber was felt to be a convenient occasion for modifying it for use with methyl bromide. This gas has several advantages over hydrogen cyanide as a fumigant besides the added advantage that it is necessary to stock only one type. The change-over was carried out by the makers of the original apparatus and between September 21st when the chamber was ready for use and the end of the year the apparatus was used on 6 occasions.

No major insect outbreaks in the Herbarium were reported during the year.

Index Kewensis. Some progress in the compilation of Supplement XII (1951-1955) has been made, but the outstanding event of the year was the publication in September, of Supplement XI (1941-1950). This volume consisted of 273 pages in the usual three column format and the immense task of proof-reading was most ably carried out by Miss M.I. Skan and Mrs. O. Tait.

Thanks are due to a large number of correspondents who wrote to draw attention to obscurely published new names, omissions and errors in previous supplements and it is hoped that such cooperation will continue.

Supervision of the compilation of the Index, under the editorship of the Director has now been relinquished by Mr. A. A. Bullock and taken over by Mr. N. Y. Sandwith.

Nomenclature. There has been no diminution in the number of nomenclatural queries received from correspondents all over the world. Many of these involve only the interpretation of one or more of the articles of the International Code but some of them involve long bibliographical researches.

During the year, preparations were made for the International Congress to be held in Paris in July 1954 and a number of proposals were put forward as a result of very cordial cooperation with the staff of the Natural History Museum under the chairmanship of Dr. T. A. Sprague.

Botanical Magazine. Parts 3 and 4 of volume 169 (N.S. tt. 198-219) edited at Kew by Dr. W. B. Turrill for the Royal Horticultural Society were published in 1953. Of the 22 articles, 17 were contributed by members of the Herbarium staff. Perhaps more than usual the preparation of

many of these articles involved much original and extensive research. The originals of the coloured plates and of the black and white text figures have been presented to the Kew Herbarium by the Royal Horticultural Society and incorporated in the collections. It is a pleasure to record that the volume has been dedicated to Miss Lilian Snelling, the brilliant botanical artist who has been closely connected with Kew for so many years.

The Library

During the year under review over 600 volumes, including a number from the Gardens, Museum and Jodrell Libraries, have been bound, rebound or repaired, and arrears of binding have been still further reduced. A number of Linnean dissertations which have been unbound for many years are now being bound and will be placed on the shelves.

As in previous years many enquiries have been received some of which have necessitated extensive bibliographical research. These, together with routine work in connection with day to day correspondence, have occupied a considerable amount of time.

Considerable progress has been made with the new loose-leaf copy of the Index Kewensis, and threequarters of the total index is now available for consultation in its new form. The work is already proving extremely useful and when finished will be a very great convenience to all users of the Index, while the single alphabetical sequence will be the means of saving a great deal of time.

The preparation of the subject catalogue has been continued and satisfactory progress has been made. The catalogue is already consulted by members of the staff and will come more and more into general use as it builds up. Current cataloguing has been kept up to date.

The classified index of titles of systematic papers of special interest, appearing in periodicals, has been largely added to during the past year.

Additional shelving has been provided on the top of the existing book presses in the Gardens Library.

We have continued to lend to other Government Departments and Agricultural Bureaux, and, when the need has arisen, have borrowed publications from other libraries for the use of members of the staff. Loans of books from the Frederick Adams collection have also been made on behalf of the Bentham-Moxon Trustees, to workers on Diatomaceae.

Books have again been presented to the library by various authors, members of the staff, and others, to all of whom we are greatly indebted. Publishers have sent a number of publications for review in the Kew Bulletin. Numbers of valuable periodicals published during 1953 have been received in exchange for the Kew Bulletin and Hooker's *Icones Plantarum*, while other publications have been sent to us in exchange for duplicate material.

We are again indebted to many societies, academies and other institutions both at home and overseas for valuable contributions. Members of the staff and many others have again generously presented reprints of their botanical papers.

As in past years, photostat copies of rare works have been provided for the library by the Ministry's Photographic Department, and valuable

additions to the collection of drawings and to the map collection have been acquired through the continued generosity of various donors.

The Museums

Coronation Year quite naturally resulted in a number of enquiries concerning the economic plants of the New World that were attracting attention in the days of Queen Elizabeth I. Two topical exhibits were arranged in adjacent cases in Museum No. 1, with economic plants representative of the two Elizabethan ages. The one case contained such plants or plant products as tobacco, potato, sunflower, French beans and logwood, while the other case, representing the present Elizabethan era, showed plants such as the black wattle, *Hibiscus* fibres, curare and certain Commonwealth timbers that have attained prominence in recent years. Curare may be considered as affording an interesting link between the two reigns. It was known to be an arrow poison in South America soon after the discovery of that Continent and is said to have been brought to England by Sir Walter Raleigh. But it is only within recent years that the alkaloid tubocurarine (extracted from *Chondodendron tomentosum* Ruiz. et Pav.) has been standardized so that it may be used with relative safety to produce muscular relaxation in anaesthesia.

A wide range of general enquiries was dealt with during the year. These included a large number of seeds, or fruits, for identification. An "unusual object" found in a pork sausage, the product of a well known firm of sausage manufacturers, proved to be a fruit of *Tribulus terrestris* L., a common weed in warm climates. Seeds found in a tin of Uruguayan meat were identified as those of *Apium graveolens* L. Seeds identified as burr seeds (*Xanthium spinosum* L.) were from a garden at Totnes, Devon, where Australian wool shoddy had been used as a top dressing. A plant suspected of causing dermatitis was found to be *Chrysanthemum parthenium* (L.) Bernh.

Specimens of a large fruited form of *Solanum nigrum* L. probably var. *guineense*, the garden huckleberry, were received for identification with the information that the correspondent experienced a slight burning sensation at the back of the throat after eating the raw fruit. Cooked with sugar ten of the berries and several spoonfuls of the juice were said to have been eaten with some enjoyment and no ill effects whatsoever. The factors influencing the production of solanine in this species are still imperfectly understood, but the "slight burning sensation at the back of the throat" would suggest that supposedly edible varieties of this plant should be eaten with caution.

Other enquiries received indicate that there is a considerable amount of interest in the origin or early history of common plants and in legends associated with them.

Among the more notable donations received during the year were some excellent, large, plank-size specimens of important East African timbers, the following being represented—"munyama", *Khaya anthotheca* C.DC., "miovu", *Entandrophragma cylindricum* Sprague, "musizi", *Maesopsis eminii* Engl., "mvule" *Chlorophora excelsa* Benth. et Hook. f., "muhimbi" *Cynometra alexandrii* C. H. Wright and "podo" *Podocarpus* sp. A larger collection of hand specimens of Uganda woods and woods from other

parts of East Africa were also received. A useful set of fifty New South Wales woods was received from Mr. George Sandwith.

Samples of fresh tropical vegetables from Ceylon, brought by air for an exhibition in London, were kindly donated by the importers. These were immediately preserved in fluid and proved useful in replacing older specimens in the museums that had become discoloured or unsatisfactory. It was also possible to obtain during the year some of the unusual tropical and sub-tropical tinned vegetables and fruits that are sometimes imported and to be seen on sale in the Soho area of London. These included Greek vine leaves, bamies (*Hibiscus esculentus* L.), litchis (*Litchi chinensis* Sonner), longans (*Nephelium longana* Camb.), guavas (*Psidium guajava* L.), "lily roots" and lotus nuts (*Nelumbo nucifera* Gaertn.), water chestnut (*Scirpus tuberosus* Roxb.) and bamboo shoots. Tubers purchased in Soho as "Kolokasi", said to be imported from Cyprus, were provisionally identified as *Colocasia esculenta* (L.) Schott., probably var. *antiquorum*, the taro of the Old World tropics. This vegetable has been grown in Cyprus for many years but is little known in British markets.

A certain amount of decoration in the Museums was possible during the year. This included painting of the interior and shelves of display cases on the ground floor of No. 1 Museum. As the cases and shelving had become very shabby a great improvement is noticeable. The brass labels or inscriptions attached to the busts of famous botanists in the Museums, which had become almost illegible through constant polishing, were replaced by modern, black and white, ivory labels. The gilded frames of large portraits of botanists in No. 1 Museum were completely renovated and greatly improved. In many instances the canvas is in need of restoration.

Dry rot unfortunately showed itself during the year, as it is so prone to do in old buildings. One outbreak occurred in Museum No. 2 and the other at the North Gallery. Repairs were however promptly carried out. Renewal of the backs and sides of some of the wall cases in No. 2 Museum was necessary.

Jodrell Laboratory

Work on the systematic anatomy of the Monocotyledons has continued steadily throughout the year. In this connection the Keeper has continued to investigate the Gramineae by studying additional genera and species as slides become available, and by working through the voluminous literature dealing with the anatomy of this group of plants. A much clearer picture of the subject is gradually being obtained, and it should be possible to embark on the task of writing a comprehensive account of the anatomy of the Gramineae fairly soon.

In recent months, Dr. Stant has made definite progress with her work on the Alismataceae, and has developed two techniques that are proving very satisfactory for cutting sections of aquatic plants in which there are numerous intercellular spaces. In one method the material is embedded in agar, and in the other in water-soluble wax, and, after either of these embedding processes, sections are cut on a freezing microtome. Both methods give good results, and require less time than the customary technique of embedding in paraffin wax.

Dr. Abraham Fahn, a lecturer from the Hebrew University at Jerusalem, who worked for about a year at the laboratory, completed a valuable investigation of the anatomy of the Xanthorrhoeaceae, an account of which is being published by the Linnean Society. He also made a study of the development of the banana inflorescence, and published an account in the Kew Bulletin. A third investigation was concerned with the nature of the tracheal elements in a number of Monocotyledons, and it is hoped that his article on this topic will appear in the New Phytologist.

Mr. P. B. Tomlinson, a post graduate student from Leeds University, has, since September, been investigating the anatomy of the Zingiberaceae, using a considerable collection of species grown in the gardens, supplemented by others kindly supplied by Professor R. E. Holttum from Singapore.

Over 200 routine enquiries have been dealt with during the year, a number that is well above the average for recent years. These have comprised the following items. The identification of well over 100 timbers, 40 samples of archaeological material, 12 roots clogging pipes or undermining the foundations of buildings, 25 samples of dried and crushed or powdered culinary herbs, 5 samples of tanning barks, 7 host plants of fungi being investigated by mycological colleagues, a few samples of reeds used for thatching or paper-making. A number of enquiries concerning the effect of atmospheric pollution on vegetation have been dealt with, and lists of references to literature concerning such topics as anaerobic respiration, the structure of pine needles, and illuminating aquaria with artificial light have been sent to correspondents.

Some of the more unusual items received for identification included the following. A sterile, etiolated plant growing on the inside wall of a house proved to be a very abnormal specimen of *Circaea lutetiana*. Leaves used for rolling cigarettes, examined on behalf of the Director of the Metropolitan Police Laboratory, were those of *Diospyros melanoxylon*. Roots alleged to be from a species of *Ranunculus*, when examined at the request of the Metropolitan Police, proved to be those of *Asparagus*. "Fibrous material" which was mixed with, and lowered the commercial value of, china clay intended for export was found to consist of a mixture of fibres from wood and cotton, together with a filamentous green alga and some *Sphagnum*. A grass clogging the blades of current meters used for research purposes in the Thames estuary was identified as *Esparto* (*Stipa tenacissima*). A small fragment of stem from North Borneo, which had aroused interest as a possible source of fibre, was found to be derived from a species of *Anodendron*, and the stem and root of a poisonous plant from Tanganyika were those of a species of *Momordica*. Material used for making model trees proved to be Reindeer Moss (*Cladonia rangiferina*), and portions of a plant with oestrogenic properties, examined on behalf of the National Institute for Research in Dairying, were identified as *Pueraria mirifica*.

The reference collection of microscope slides continues to become progressively more useful as more items are added to it. Through the combined endeavours of Mr. Richardson and Miss Catling some 470 slides have been added during the year. These comprise slides of about 100 timbers, mostly from Malaya and Surinam, but including some of

wood specimens received from the Director of the Forest Products Research Laboratory at Princes Risborough. About 250 slides of the Gramineae, representing some 80 species belonging to 50 genera, together with about 120 slides of members of the Xanthorrhoeaceae have also been added to the collection.

A number of botanists and other scientists have called at the laboratory to discuss specific problems with which they are concerned. These included such subjects as the occurrence of tannins in different families of flowering plants, the structure of cuticle in relation to the application of selective weed killers, and the identification of fossilized timbers.

Research workers who have visited the laboratory for more prolonged periods were as follows :—

Mr. R. C. Carolin. Cytology of *Dianthus*.

Professor R. D. Gibbs. Collecting and preparing material for biochemical investigation.

Dr. A. Fahn. Anatomy of Xanthorrhoeaceae, Musaceae and other Monocotyledons.

Mr. P. B. Tomlinson. Anatomy of Zingiberaceae.

The Gardens

The year as a whole was a favourable one for plant development, the rainfall being above the average and the periods of drought of shorter duration than in recent years. The milder weather particularly in late autumn assisted considerably in the carrying out of general maintenance work out of doors, and was accompanied by exceptionally early development of both flower and leaf bud on many specimens. An interesting feature was the climatic extremes since the month of July had the heaviest rainfall of 4.35 in. and March only .48 in., whilst December was a close second for the lowest rainfall figure for the month, and that only .6 in. was recorded.

There was an increase in the number of visitors over 1952 despite the fact that the highest attendance on one day was hardly fifty per cent. of that recorded during recent years.

Arboretum

Losses among the older trees continue, and although not so heavy as in 1952 a total of 15 large trees were removed during the year because of their dangerous condition. The two large specimens of *Cedrus libani* near the Japanese Gate, reputed to have been planted in 1761 had to be removed. Many years ago holes with a large area near the base of both trees had to be cemented but deterioration continued within and the trunks had become little more than hollow cylinders from ground level upwards. One tree had only one living root. Another loss was that of the old Tulip tree, *Liriodendron tulipifera*, between Cambridge Cottage and the Director's Office, though only thought to be 70 years old the main trunk was badly decayed, the tree having suffered from a serious attack of Honey Fungus. Eight large and very old Beech had to be taken down as well as several Pines, whilst the last of the old Siberian Crabs, *Malus*

baccata, adjacent to Victoria Gate was seriously damaged in a gale and had to be removed.

The display of flowering trees and shrubs were well above the average, the Magnolias, Rhododendrons and Japanese Cherries being outstanding. The new collection of single flowered Lilac (*Syringa*) planted a few years ago flowered freely, and having made strong growth there is every possibility of this collection of modern varieties becoming an outstanding feature within the next few years. *Magnolia kewensis*, near King William's Temple, flowered very freely, and it is developing into a large specimen intermediate in habit between its parents (*M. salicifolia* $\times$ *M. kobus*). The young tree of *Magnolia macrophylla* planted 4 years ago produced several flowers, these being quite 12 in. in diameter, creamy white in colour and very fragrant. *Gordonia altamaha* deemed a border line subject at Kew is now becoming satisfactorily established at King William's Temple. Several flowers were produced but as they did not bloom until October the cold night conditions did not allow of their opening properly. Other noteworthy subjects to flower freely include *Viburnum bodnantense* Dawn, *Viburnum fragrans* Farrer's Pink, *Hydrangea villosa*, *Eucryphia glutinosa*, *E. cordifolia* and *E. nymansay*. *Halesia monticola* var. *vestita* flowered with exceptional freedom and proved a great attraction. Although of doubtful hardiness at Kew plants of *Desfontainia spinosa* planted two years ago, have grown well and quite a number of the scarlet and gold flowers were produced. The Philadelphus collection again proved very attractive when in flower while the various *Rosa* species and varieties both in the collection beds and the "Dell" flowered freely and proved a source of interest to visitors. *Prunus subhirtella autumnalis* has flowered more freely than for a number of years, and no doubt the mild autumnal condition was responsible. The high temperatures for the time of the year recorded just prior to Christmas were responsible for a number of subjects flowering out of season or earlier than they would otherwise have done. Those flowering prematurely included *Chaenomeles lagenaria*, *Forsythia ovata* and several species and varieties of *Prunus*. *Clematis orientalis* and *C. tangutica* growing on the Ruined Arch produced an excellent display of flowers and fruits. Several of the well established *Clematis* specimens on the Clematis Wall also provided a good display, but in many instances the plants growing on this wall proved most unsatisfactory.

During the year the following noteworthy additions were made to the collections: *Betula andrewsii*, *Cornus walteri*, *Fothergilla gardenii*, *Pinus coulteri*, *Quercus myrsinaefolia*, *Cytisus hillebrandtii*, *Sorbus pallescens*, *Prunus gravezii*, *Helwingia japonica*, *Asimina triloba*, *Ptelea polyademia*, *Fagus grandifolia*, *Potentilla tridentata*, *Sorbus mitchellii*, *Pinus holfordiana*, *Salix purpurea*, *Buddleja davidii* var. *nanhoensis alba*, *Desmodium calianthum*. Two hybrid *Prunus* were also received *P. accalade* and *P. taoyoma* Zakura and *Forsythia Arnold Giant* and *Clematis spooneri* Highdown var. were sent by Colonel Stern. Measures taken to control the outbreaks of Rhododendron Bug and also Rhododendron Bud Blast which have been so prevalent in recent years seem reasonably satisfactory and the use of a proprietary insecticide and a fungicide applied with the power operated Atomiser sprayer loaned by Messrs. Strawson Chemical Co. Ltd. appear to provide a fair measure of control. Further sprayings will

be necessary before a clearance of the pests can be achieved. In 1953 the whole of the *Rhododendron* bushes throughout the Gardens were sprayed in this way. This operation being made possible because the two spray referred to can be mixed together thereby making the operation more economical in both labour and materials than with the wet type of spray used formerly.

Rearrangement of several shrubberies had to be carried out during the early part of the year particularly in that area known as the "Botanics". The large Elm at the rear of No. 3 Museum broke off a few feet from the ground and damaged many shrubs on the North East side of the building. The opportunity was taken, after clearing, of overhauling and enlarging the border which now forms an interesting collection of trees and shrubs.

East of No. 1 House an old Beech tree had to be removed and this enabled the border to be enlarged and improved thereby brightening what was hitherto a dull part of the Gardens. The majority of the *Rhododendron* beds along the Broad Walk have been deteriorating for a number of years but steps for their replacement have begun.

Along the eastern boundary of the Gardens the collection of *Camellias* is ever increasing and by devoting part of the border near to the Flagstaff and North Gallery it is anticipated that the majority of the varieties acquired and grown on in the Nursery in recent years can thus be accommodated. The shrubby species of *Potentilla* were replanted and the renovation of the border containing the *Callunas* near King William's Temple were also carried out, fresh species and varieties being added from the Nursery.

During the year, seed from 77 different Natural Orders (Families) 230 genera and 1,500 species was collected, this being well over the average for previous years. From January 9th to December 9th, 1953, 4,952 packets of seeds were distributed, this being an increase of over 500 on the previous year. In addition, quantities of plant material have also been sent out to Botanic and other scientific institutions both at home and overseas.

In the Arboretum Nursery a new range of cold frames was constructed to house seedling plants of *Rhododendrons* and allied genera. Two additional leaf storage bins were erected in the Stable Yard whilst the concreting of the surface outside the garages was completed. The old Loose box at the stables was converted to accommodate the cold storage chamber and refrigerator which is to be used for seed storage and stratification. Sliding doors have been fitted to the old cart shed which now forms the main garage where most of the mechanised equipment is housed including the new 25 cwt. Austin Lorry which was put into service late in the year. The enforced economy on road repairs adopted in 1952 has brought about a great increase in expenditure throughout the year. Normal maintenance was greatly increased and in addition to the spraying with Bitumen Emulsion and chipping, a large section of the Holly Walk was treated with a modern cold Asphalt cover. This surface applied to a depth of $\frac{3}{4}$ in. and rolled to $\frac{1}{2}$ in. thickness is very resilient and comfortable to walk on and it is estimated to wear for ten years before further treatment is necessary.

Alpine and Herbaceous Department

The process of reconstruction in the rock garden was carried a step further during the winter months. The west side of the island at the north end of the rock garden was completely taken down and redesigned to conform to the general scheme for the sandstone section. Most of the existing stone was used in the reconstruction thereby necessitating only a limited amount of new stone being purchased. The position of some of the very large pieces of rock weighing over 1 ton was made much easier by the use of a mobile lifting tower and chain tackle. The old soil was taken out of the various pockets to a depth of about 1 foot and a suitable mixture of new soil was put back in its place. The whole site will be replanted with a fresh stock of young plants which have been propagated in readiness. On the section of the rock garden devoted to limestone, minor alterations, replanting and other improvements were also carried out, particularly to the portion at the back of the waterfall at the south end which had become very much overgrown with shrubs.

The Alpine house during the spring and early summer was one of the main attractions in the Gardens and provided much of interest and never failed to give a colourful display. This year many pans of the spring flowering bulbs came into bloom much earlier due to the very early and mild spring, this necessitated opening the Alpine house to the public a few weeks earlier than usual. The weather generally suited most of the alpine and rock garden plants due to the very cool summer which helped to prolong the length of their flowering season, while the very wet period during the month of July enabled most plants to make good growth. It suited moisture loving plants such as *Meconopsis*, Primulas, *Cyananthus*, and Gentians, which thrived particularly well, though many annuals and biennials which are a native of some of the warmer parts failed to reach maturity through shortage of sunshine and the cold nights. This was particularly noticeable with plants belonging to *Solanaceae*, *Polemoniaceae* and *Portulacaceae*. The number of times when the rock garden had to be watered artificially was small compared with some seasons. The collecting and harvesting of seed of both alpine and herbaceous plants was generally good particularly those which ripened early in the season, but in many instances those which normally mature late in the autumn produced little or no seed, probably due to the very unfavourable climatic conditions which occurred at that period of the year.

The collection of *Hosta* spp. which have become very popular foliage plants of recent years were moved from the piece of ground alongside the rose pergola. The rootstocks were divided and replanted in irregular groups, in a more prominent situation by the wild garden near Cumberland Gate, the ground had previously been well trenched and manured, and once established this collection should form a very pleasing feature. The display of flower in the Iris garden was prolonged this year by the cool and overcast conditions which prevailed during their flowering period and although they were not quite up to the standard of previous years, this was to be expected as the plants in several of the large beds had been lifted and divided the previous year. After flowering several more beds in which the plants were showing signs of deterioration were lifted, divided and replanted, large amounts of mortar rubble and mushroom manure were incorporated into the existing soil and given

similar treatment to those beds which had been done the previous year. With the wet period that followed the plants soon responded and put on appreciable new vigorous growth.

Among the many interesting plants grown in the natural order beds the following flowered particularly well. *Polygonum campanulatum*, and *Anaphalis nubigena* both very good late summer flowering plants, a native to the Himalayan Mountains. *Cynara scolymus*, *Paeonia mlokosewitschii* a beautiful species from the Caucasus, *Zygophyllum fabago*, an unusual Mediterranean plant, *Liatris spicata*,—N. America and *Thelesperma burridgeanum* a very rare annual from Texas which was at one time thought to be a bigeneric hybrid.

Hosta tardiflora. (T204) native of Japan and which received an Award of Merit at the R.H.S. in 1948, *Phygelius aequalis* (T186) a new species collected from South Africa, and *Delphinium orientale* (T186) a very pretty annual; native to Spain and Morocco were all used from this department during the season for figuring in Curtis Botanical Magazine, Vol. CLXIX.

During the year the following plants from the department received an Award of Merit at the R.H.S. shows. *Bulbocodium vernum*, a bulbous plant from the Alps of Europe. *Ligularia macrophylla*—native of Siberia and *Lychnis haageana*—Japan. The last two are very handsome herbaceous plants. Cultural commendations were also received from the R.H.S. for well grown pans of *Primula sherriffae*, *Pentaptera sicula* and *Cassiope lycopodioides*.

Among the many interesting collections of seeds and plants received in the department during the year were :—a large consignment of seeds collected in Nepal by S. Polunin, and distributed through the British Museum. Carl S. English sent a collection of seeds native to the Olympic Mountains in the State of Washington and the mountain ranges of Oregon, it included several *Dodecatheon* spp., *Lilium vollmerii* and many other interesting rarities. Seeds of *Primula verticillata* collected from Mount Budhit in Ethiopia by Hugh Scott has produced a fine batch of young seedlings. Mrs. E. W. Kennedy sent in living material of *Colchicum* spp. and other bulbous plants which were collected in Cyprus. Capt. Mark Olgivie Grant sent in several large consignments of living plants which he collected from the Greek Islands of Andros, Kos and Karpathos included amongst which were *Lilium albanicum*, *Arum creticum*, *Helleborus cyclophyllus*, *Colchicums*, *Narcissus* spp., *Campanulas* and *Saxifragas*, also received from the same source were some beautiful rosettes of *Janakea heldreichii* collected on Mt. Olympus, a plant which is now very rare in cultivation. Valuable consignments of seeds, plants, and cuttings were received from Edinburgh, Cambridge and other Botanic Gardens and the R.H.S. Gardens, Wisley. During the year 5,493 packets of Alpine and Herbaceous seeds were sent out to botanical gardens and other horticultural establishments throughout the world, as well as quantities of plant material for teaching and other scientific research work. No new constructional work was carried out in the propagating department during the year, although many frames, require attention. One of the old propagating houses (No. 24) was painted inside and out during the late summer. A number of new cocoa nut

fibre mats have been purchased for protecting some of the unheated frames during frosty weather. These have been made to suit our requirements.

Temperate Department

Growth in the Australian House, which was planted in the spring of 1952, has been very satisfactory and the house already has a well furnished appearance. Among the genera which have flowered most freely, *Acacia*, *Callistemon*, *Epacris*, *Grevillea* and *Prostanthera* deserve mention, and *Westringia rosmariniformis* has been the most consistently flowering species, bearing flowers in every month of the year. Several species from the Monte Bello Islands have flowered, but except where seed has set, the survival of these plants through the winter is by no means certain. The outdoor border surrounding the house has again been used exclusively for Australian plants, chiefly annuals, which provided a colourful feature in summer and autumn. Two beds in the Himalayan House which were resoiled last year have been replanted, chiefly with *Rhododendron* species, and the labour entailed in resoiling is clearly justified by the improved growth. The excavation of a badly drained bed in the centre block of the Temperate House is now in progress. A considerable amount of relabelling has been done and the work of indexing the collection continues. The number of specimens referred to the department for naming has more than doubled, 263 having been identified and a further 23 verified during the year. The number of species from which seed has been collected for exchange with other institutions has again risen sharply. The largest consignment of seeds received during the year was that collected by Dr. R. Melville in Australia, this including some species which may prove hardy enough to survive in the open. Several annuals from this source flowered and seeded in the autumn. A particularly welcome addition to the collection was a plant of *Tecomathe speciosa* sent by Dr. G. H. Cunningham. This species is endemic in the Three Kings Islands and is the only known representative of its family (Bignoniaceae) in the New Zealand area. Material of 6 species has been supplied for figuring for the Botanical Magazine, and specimens of 12 monocots. have been provided for investigation in the Jodrell Laboratory.

In the exhibition of Commonwealth plants which was a special feature of Chelsea Show to mark Coronation Year, the Australian, New Zealand and Canadian sections were staged by the department, and a limited number of plants were provided for other sections. For the Centenary Exhibition held in the Herbarium this year, living material was supplied to illustrate several exhibits and included a representative collection of the Acacias of Australia. *Xeronema callistemon*, *Hovea longifolia* var. *lanceolata*, *Eucalyptus calophylla* var. *rosea* and *Hedyscepe canterburyana* were among the more interesting plants to flower in 1953.

In October at the request of the New Zealand Government a collection of New Zealand plants embracing 24 different items were sent for planting at the Kathleen Mansfield Memorial at Menton. The plants were despatched in a special railway container and arrived there safely.

Decorative Department

The best feature of the spring bedding was the display of Darwin and May flowering Tulips on the Palm House Front, which remained in

excellent condition until the end of May owing to the mild weather and no late frosts. Many of the summer bedding plants, particularly the Pelargoniums and *Verbena venosa*, flowered exceptionally well, these no doubt having benefited by the showery weather during and just after planting time.

The Rose Garden has again been enriched by several new varieties of H.T. and floribunda roses, eight beds in all having been re-soiled and planted up with fresh stock. In the Conservatory the standard display of popular greenhouse plants such as Cinerarias, Calceolarias, Primulas, Cyclamen, Gloxinias, Streptocarpus and winter flowering Begonias has been good and was no doubt assisted during the autumn by the mild spell. On the other hand, the Chrysanthemums seemed to dislike the mild weather and mildew was prevalent; great difficulty being encountered to keep blooms back to furnish the house for the Christmas holiday period. With the erection of new concrete staging in the warm end of House No. 4 this completed the staging programme for this house, the cool and centre sections having been completed during 1952. Apart from this work, no other new or major repair work has been carried out in the department. During the year, 138 entries were recorded as having been received by the department, consisting of rooted plants, cuttings or batches of seed.

Tropical Department

Palm House

Owing to the continuous structural movement of the roof, breaking of glass, and falling metal, it was necessary for safety sake, to reduce the staff working in the Palm House, leaving only sufficient for maintenance of the plant collections. The surplus staff was transferred to other departments in the Gardens. Many of the large Palm and Cycad specimens have been overhauled and in many instances resoiled and tubbed in readiness for moving when the reconstruction work commences. Of the large trees and shrubs which are permanently planted in the beds, efforts have been made to propagate those of which stocks are limited, e.g. *Brownea crawfordii*, *Talisia princeps*, *Pandanus furcatus*, *P. utilis* and the *Dracaenas*. Owing to the size of these plants it is not possible to take cuttings in the normal way, so we have had to adopt the old method of ringing and in-arching. Several of the very large duplicate Palms have been taken down to give more light to the other plants, we are propagating. Stems and other material of the plants removed have been supplied to the Jodrell Laboratory, and the Museums.

No. 15. Water Lily House

Owing to the Palm House being closed for reconstruction, No. 15 House was opened to the public in early April, six weeks earlier than usual, and with the favourable and exceptionally mild autumn, it was possible to maintain the plants in good condition, and keep the house open until the end of December; normally the house is closed in October. It is interesting to note that many of the day flowering Water Lilies continued to give a good display of flowers until December, and though the flowers were rather smaller than usual, they were very attractive. The Brazilian climber *Stigmaphyllon ciliatum* produced many clusters of rich

yellow flowers, which resemble in shape and colour those of the Orchid *Oncidium varicosum* var. *Rogersii*. The two large plants of *Clerodendron thomsonae* var. *magnifica* planted out in the porch beds, have now reached maturity, and flowered profusely for two months during the summer.

Orchids and T. Range

Pits No. 15 A & B have been overhauled, new ventilator lights fitted where necessary, and the interior repainted. A lighter coloured paint to reflect more light during the winter months has been used. New lath blinds have been fitted to Orchid Pits No. 15A, B and D. The two new sectional boilers installed at the end of last year have proved very efficient, and given the additional heat required in the Orchid Houses. During the past few years our Orchid collection has greatly improved and many of the large specimen plants produced an abundance of flowers this season. The short day flowering varieties e.g. *Laelia anceps*, flowered better than they have for many years. Orchids of interest which flowered during the year : *Cynorchis kassneriana*, *Dendrobium hercoglossum*, *D. purpureum*, *Epidendron equitons*, *Goodyera procera*, *Lacaena spectabilis*, and *Paphiopedilum lowii*. Once again our collection of species has been greatly increased from both home and overseas sources. Donations of Orchids were received from the following : Messrs. Sanders, St. Albans, F. Wyatt, Sussex, H. Q. Levy, Jamaica, B.W.I., H. W. Simmonds, Fiji, E. A. Robinson, N. Rhodesia, A. J. Woodruff, Manila, Phillipines, D. Westwood, Accra, Gold Coast, and Bangkok Botanical Section, Thailand. Material of *Sarcochilus fitzgeraldi* was supplied for the Botanical Magazine. *Jacobinia suberecta* a native of Uruguay flowered profusely in No. 7 House for over two months. It was shown at the Royal Horticultural Society and received an "Award of Garden Merit". *Justicia flava* raised from seed received two years ago from the Herbarium, is a native of East Tropical Africa. The plant with its small deep golden yellow flowers should prove to be a very useful plant for furnishing the greenhouse during the summer months.

Ferneries

The rafts of Davallias and Polypodiums in House No. 2, were all renovated in early spring, and some of the old over-grown specimens renewed from material propagated the previous year. Many of the new species of ferns received from Prof. R. E. Holttum of Malaya in 1952 are now established, and material of these plants has been supplied to Prof. I. Manton, Leeds University, throughout the year for cytological examination. The Lycopodium spp. which we have procured and propagated during recent years, are now making excellent basket plants and just beginning to produce spores. The large specimen of *Alsophila crinita*, planted out in the Chapel of No. 2 and which had been at Kew for many years, died this year. The cause of its death was no doubt due to the cold water drips from the apex of the house, which is in a very decayed condition. Three consignments of fern species were received by air transport and in general they arrived in good condition. The following were donors : Prof. R. E. Holttum, Singapore, C. D. Adams, Achimota and Dr. R. Melville, Victoria, Australia. The following interesting ferns have been successfully raised from spores :—*Alsophila*

crinita, *Arthopteris orientalis*, *Deparia moorei*, *Shanerophlebia juglandifolia*, *Tectaria chrysotricha*, and *Thelypteris cirrhosa*.

No. 5 House

It is becoming more and more difficult to keep the collection of Cacti, and Succulent plants in this house, in good condition. The rust corrosion on the roof and sides, is rapidly moving the roof lights and glass, and the roof is no longer water tight. It is also very difficult to maintain adequate temperatures during cold weather. The Office of Works, have recently fixed long strips of roofing felt, at the foot of the lantern, to keep out the water which, during the resting period in winter, is so very detrimental to succulent plants.

Tropical Pits

Among the seeds and plants received during the year, were large collections from the University, Achimota, Gold Coast, Georgetown Botanic Gardens, British Guiana, J. Marnier-Lapostolle, Cap Ferrat, France, and The Herbarium. A number of the plants raised from seed received from the Herbarium, will be very useful additions to our collection of flowering plants, used annually for furnishing houses Nos. 7 & 8 T. Range. The propagation of plant material has increased very markedly during the year, owing to the need for propagating climbers and many of the smaller plants in the beds in the Palm House of which stocks are limited. This is to get the plants established before reconstruction takes place. Material of *Cyrtanthus falcatus* was supplied for the Botanical Magazine. During the year one hundred and eight fine consignments of plant material was packed and despatched to Horticultural Establishments at home and overseas. This included three wardian cases to the following : University Botanic Gardens, Achimota, Gold Coast, Botanic Gardens, Accra, Gold Coast, and Starke Ayers, Capetown, S. Africa. From April, 1953 a sweep, for cleaning the boiler flues, and chimneys was appointed as a member of the Gardens staff. This acquisition proved most successful, the boilers giving higher heating efficiency once the flues were cleaned weekly.

Commonwealth Exhibit

In the early part of the year two of the Tropical propagating pits, had to be devoted to the cultivation and forcing of plants required for the Commonwealth Coronation Exhibit, staged at the Chelsea Show at the end of May. Large consignments of plants were received from the countries of the Commonwealth, the plants coming in Wardian cases by sea, and in large containers by air freight. The plants as a whole arrived in good condition, and we were successful in getting a number of them to flower in time for the Show. A large number of plants had to be taken from the Kew collections, to help to build up the various groups staged. Plant material was received from the following Commonwealth countries : Division of Botany, Pretoria, S. Africa, Hong Kong, Mauritius, Bermuda, British Honduras, Peradeniya Botanic Gardens, Ceylon, Seychelles, Bahamas, Suva, Fiji, Calcutta Botanic Gardens, India, Malta, Kuala Lumpur, Federation of Malaya, Dept. of Agriculture, Accra, Gold Coast, Sierra Leone, Georgetown Botanic Garden, British Guiana and Cyprus. Cut flower material received by air from the

following : Sydney Botanic Gardens, Bermuda, Nairobi, Kenya Colony, Singapore, Cyprus and flowers in ice blocks from Australia House. It is interesting to record that many of the plant species received for the Commonwealth Exhibit, have proved valuable additions to the Kew collections.

Quarantine House

Propagation of Cacao by means of leaf cuttings has continued throughout the year, and cuttings of the "Para Rubber" have been successfully rooted in sandy soil, in a closed frame with a humid temperature of 85° and bottom heat. It is hoped this coming season to carry out further experiments with the cutting system as apparently this plant cannot be rooted from cuttings in the Tropics. Plant material received : Clones of Cacao, G.S. 29 and G.S. 36 from Research Station, Trinidad, Clones of Rubber R.R.I. 501 and P.R. 107 from Rubber Research Institute, Malaya, Budwood of Cacao in Western Samoa, Department of Agriculture, Fiji, *Cephaelis ipecacuanha* from Peradeniya, Ceylon, *Cephaelis tomentosa* from Trinidad Department of Agriculture.

Plants despatched.

- 31 Musa East African spp. to the Imperial College of Tropical Agriculture, Trinidad.
- 16 Musa lacatan to the Gold Coast Agricultural Department.
- 14 I.C.S. P.A. & N.A. clones of Cacao to the Department of Agriculture, Lagos, Nigeria.
- 32 I.C.S. P.A. & N.A. clones of Cacao in two wardian cases, to the Department of Agriculture, Kuala Lumpur.
- 18 I.C.S. & P.A. clones of Cacao to the Department of Agriculture, Peradeniya, Ceylon.
- 12 I.C.S. & P.A. clones of Cacao to the Department of Agriculture, Gold Coast.
- 19 I.C.S. P.A. & N.A. clones of Cacao to the Department of Agriculture, Suva, Fiji, in Wardian case.
- 24 Rooted cuttings of *Cephaelis ipecacuanha* to the Department of Agriculture, British Honduras.
- 6 *Agave lechuguilla* to the Department of Agriculture, British Honduras.

Publications Kiosk

A total of 22,047 copies of the Illustrated Guide were sold during the year.

Economic Botanist

This post was occupied by Sir Geoffrey Evans on a part-time basis until he retired on the 31st December, 1953, but he continues to serve on the Pinetum, Bedgebury, Committee, as one of the Kew representatives.

As in former years, correspondence concerned with tropical agriculture and botany, was answered, and many serving officers from overseas territories and foreign tropical countries were interviewed. The Economic Botanist represented Kew at the Cocoa Conference promoted

by the Cocoa, Chocolate and Confectionery Alliance, and held in London during September. He presided over one of the sessions. He also attended various committees and sub-committees set up by the Colonial Office to consider subjects such as cocoa, vegetable fibres, and oilseeds.

The Plant Quarantine House at Kew was particularly busy during the year as the demand for disease-free cocoa, rubber and bananas was considerable. Numerous sprouted rubber seeds, rooted cocoa clones and banana suckers were despatched overseas, and an equally large amount of material was received here.

Apart from these activities, considerable interest has arisen in three other crops. The need to breed groundnuts with better yield and disease resistance, has led to a demand for wild species of *Arachis* for plant breeding purposes, and three new species were imported from the East African Agriculture and Forestry Institute, and are now being propagated.

Cephaelis ipecachuanha. An attempt is being made to extend the cultivation of this medicinal plant, which is now produced on a considerable scale in Malaya only. At the request of the Director of Agriculture, British Honduras, cuttings of a good variety were obtained from the Peradeniya Gardens in Ceylon, and these are being propagated before forwarding to British Honduras.

Plants of *Agave lechueguilla* were forwarded for trial in Tanganyika. This plant produces a valuable fibre suitable for brush making.

Experiments in rooting cuttings of *Hevea brasiliensis* have proved successful, and an article on the methods and technique has been sent to the Journal of the Rubber Growers Association.

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Assistant Director

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Economic Botanist

Sir Geoffrey Evans, C.I.E., M.A., Dip. Agric.

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S. W. Rawlings (Decorative)

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G. Nicholson (Orchids—Tropical)
H. Bruty (Ferneries—Tropical)
F. Larkbey (Decorative)
W. Bridle (Temperate)
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Sir Geoffrey Evans, C.I.E.

Sir Geoffrey Evans, C.I.E., retired on the 31st December, 1953, after 47 years spent in the public service. He was educated at Bury and at Downing College, Cambridge, where he took the Natural Science Tripos in 1904, and the Diploma in Agriculture in 1905. After a year on the staff of the University Department of Agriculture, he joined the Indian Agricultural Service and was posted to the Central Province as Principal of the newly formed Agricultural College at Nagpur. From 1908-18 he was Deputy Director of Agriculture for the Northern Division. Here the main crop is wheat, and he carried out experiments in wheat breeding. He was successful in raising hybrids between *Triticum vulgare* and *Kapli*, a variety of *T. dicoccum*. The selections from this cross proved highly resistant to rust (*Puccinia glumarum*) and consequently had a great vogue for many years. Before the war he had joined the Indian Army Reserve Officers and after serving in India for a year, he was posted to Iraq-Mesopotamia as it then was—as Director of Agriculture to the Mesopotamia Expeditionary Forces. For his services he was awarded the C.I.E. and retired with the temporary rank of Colonel. He was asked by the Government of India to report on the Agricultural Department in Burma, and one of the results of this report was the foundation of the Agricultural College at Mandalay.

On return from leave in 1920, he was appointed Director of Agriculture, Bengal, and held this post until the autumn of 1923, when he retired from the Service to join the Empire Cotton Growing Corporation, and by them to be transferred to Queensland as Director of Cotton Culture. He held this post for more than three years and during that period opened several cotton experimental farms in the districts that seemed suitable for cotton growing. During this tour he was asked to report on cotton growing prospects in neighbouring territories, including the Northern Territory of Australia, the Fiji Islands, Papua and New Guinea, parts of which had at that time hardly been explored. On return

to England on leave in 1926, he was asked by the Governors of the Imperial College of Tropical Agriculture to proceed to Trinidad and act as Principal. He was confirmed in that post in 1927, and remained there for twelve years. For his services he was created a Knight Bachelor in 1934. Retiring in 1938, he accepted the position of Economic Botanist, Kew, succeeding the late H. C. Sampson. His services were continually in demand by H.M. Government, and he served on three commissions. In 1938 he visited British Guiana as a member of the Anglo-American Refugee Commission and travelled extensively in the southern parts of this Colony.

In 1943-44 he was a member of the Commission on Higher Education in West Africa and visited all the four West African Colonies.

In 1947-48 he was appointed Chairman of the West Indian Settlement Commission.

He retired from Kew on December 31st, 1953.

During the war he acted as Director of the Royal Botanic Gardens for nearly two years after the sudden death of Sir Arthur Hill, and was responsible not only for the everyday working of the Gardens, but also for the Air Raid Organisation. He was captain of the original L.D.V. force of 54 men raised by the Gardens' staff at two days' notice, and later absorbed in the Richmond Battalion of the Home Guard, which he commanded for nearly three years.

Even in his retirement his services will not be lost to Kew, for he has consented to serve as the Chairman of the Committee which manages the affairs of the Bedgebury Pinetum.

His numerous friends at Kew will miss his wise counsel, but wish him many years of well-earned rest.

Successful Orchid Culture.*—According to the introduction this book has been written for those with little or no knowledge of orchids and their cultivation, and it explodes a popular fallacy that the cultivation of these beautiful flowers is one of the privileges of the affluent, requiring hot-houses, highly skilled care and attention, and the expenditure of a great deal of money. It describes many orchids which can be grown either in a cool greenhouse or an intermediate house with a slightly higher temperature. The book is divided into three parts, the first dealing with the cultivation of orchids, with chapters on the orchid greenhouse routine, management and culture, propagation and hybridization, and pests and diseases. The second part deals with the cool house and gives monthly notes and an account of some orchids which can be grown in it. The third part is concerned with the intermediate house and includes chapters on cultivation, more monthly notes, and the names of orchids suitable for growing there. The book is well illustrated with many good photographs, a few line drawings and is provided with an index.

H. S. MARSHALL.

* *Successful Orchid Culture*. By P. R. C. Rittershausen. London: W. H. & L. Collingridge Ltd., New York: Transatlantic Arts Inc. 1953. Pp. 136. Price 15 -.

Obituary

MRS. MARGARET VOSS.

We regret to record the death in October, 1953 at her home in Johannesburg of Mrs. Margaret Moss, for many years curator of the Moss Herbarium, of the Witwatersrand University. Born in Blackburn, England in 1885, she accompanied her parents, Mr. and Mrs. Heatley, to the United States at the age of eight. There she went to school at Fall River, Mass. She graduated A.B. from Wellesley College in 1908 and, after a short study visit to Germany, returned as Instructor in Botany to Wellesley and took her A.M. in 1910. Appointed in 1919 to the Huguenot University College in Wellington, Cape Province, South Africa, she met the late Prof. C. E. Moss at a meeting of the South African Association for the Advancement of Science and joined his staff in Johannesburg at the conclusion of her term of office at Huguenot. Very shortly afterwards she married Prof. Moss. Mrs. Moss remained an active member of the staff of the Department and, after her husband's untimely death, took over the curatorship of the herbarium which Prof. Moss had so carefully built up and guided its destinies for the next 20 years until her retirement in 1950. She herself was especially interested in *Gnidia* and *Lasiosiphon* and in the Marine Angiosperms of the East African Coast. A very meticulous worker, Mrs. Moss published little herself but possessed to an unusual degree the ability to inspire her students who constitute her living monument. She had one son who died of meningitis in 1939 in his first year at the University.

H.B.G.

MISS PATRICIA RAWDON

As this issue was going to press, we received the tragic news of Miss Patricia Rawdon's death in a road accident on 7th February, 1954.

Miss Rawdon came to Kew in July, 1952 as Assistant Experimental Officer in charge of the National *Dianthus* Collection, and in the succeeding months won the esteem of colleagues in the Herbarium and Gardens through her quiet manner, helpfulness, and patient industry. Her premature death is an unexpected loss to *Dianthus* research, and to the European department at Kew.

The first of an intended series of *Dianthus* revisions—a note on *Dianthus viscidus* Bory et Chaub.—was published by Miss Rawdon in the *Kew Bulletin* 1953, no. 4 (1954), and showed that she had acquired, in the brief space of eighteen months, a clear understanding of the intricate taxonomic and nomenclatural problems involving this difficult genus. It is sad to reflect that this first contribution to botanical literature was also to be her last.

R.D.M.

NOTES FROM THE EAST AFRICAN HERBARIUM: II*

LINACEAE

Nectaropetalum kaessneri Engl. in Engl., Bot. Jahrb. **34**, 151 (1904).

Erythroxylum sp. nov. ? Brenan & Greenway, Check Lists of the Forest Trees and Shrubs of the British Empire, No. 5, Tanganyika Territory, Part II, 195 (1949).

This apparently rare species is represented in the East African Herbarium by three sheets.

TANGANYIKA. Tanga district, north of Ngole, sea level, 9 June 1937, Greenway 4954 (EA, K, PRE) :—a much-branched shrub to 5 m. with small green fruits [sic—actually buds] ; growing on the sea-shore with *Haplocoelum*, *Manilkara*, *Sideroxylon*, *Cynometra*, *Diospyros* and *Euclea* association on the borders of *Avicennia* swamp.

KENYA. Jilore, sea level, March 1938, Dale 3874 (EA, K) :—shrub to 3 m. in dry *Brachylaena-Cynometra* country. Mwachi forest, coast, Sulimani 3374 (EA, K). B.V.

DIPTEROCARPACEAE

Marquesia macroura Gilg in Engl., Bot. Jahrb. **40**, 485 (1908).

The following gathering appears to be the first record of this plant from Tanganyika. It is a Rhodesian element to be expected in SW. Tanganyika which has many other plants in common with Rhodesia, e.g. *Entandrophragma deleveyi* De Wild.

TANGANYIKA. Ufipa District, Kalambo river, on rocky ground, August 1952, Groome 29 (EA, K). Common medium-sized tree ; stem often wavy and usually fluted, up to 13 m. ; branches spreading irregularly ; branchlets, thin, fairly short ; bark slightly rough with fairly long fissures, not deep, thin, with tendency to scale in longitudinal fissures ; slash inner bark, thin dark-red line, then reddish brown becoming rich brown and fading to creamy brown, slightly fibrous, neither distinctly wet nor sticky ; sapwood creamy white ; makes good planks. "Mwezi" (Kirungu). B.V.

TILIACEAE

Triumfetta shinyangensis Verdcourt sp. nov. in sectione *Lappula* DC. emend. Sprague et Hutchinson ; *T. rhomboideae* Jacq. affinis fructibus multo majoribus valde differt.

Frutex. *Ramuli* lignosi, brunnei, striati, dense hirsuti ; rami vetustiores mox glabrescentes ; internodia 0.5–4 cm. longa. *Folia* alterna, petiolata, suborbicularia, basi cordata vel subtruncata, discoloria, crenato-serrata, utrinque dense stellato-tomentella, 3–6.5 cm. longa et 3–6 cm. lata, basi 6–7-nervia ; petioli hirsuti, 1–3 cm. longi ; stipulae anguste lanceolatae, hirsutae, 1.2 cm. longae et 0.15 cm. latae. *Inflorescentia* terminalis et axillaris ; pedunculi 0.2–0.8 cm. longi ; pedicelli 0.2 cm. longi. *Sepala* 5, lineari-oblongata, 1 cm. longa, basi 0.15 cm. lata et ad apicem 0.25 cm. lata, intus glabra, extra hirsuta, cornu subapicali robusto 0.25 cm. longo. *Petala* 5, oblongata, basi cuneata et villosa,

*Continued from K.B. 1952, 365 (1952).

0.6 cm. longa, 0.3 cm. lata. *Discus annularis*, membranaceus, ciliatus, 0.05 cm. longus. *Stamina* circiter 40, filamentis 0.5 cm. longis, antheris 0.075 cm. longis. *Ovarium* ovoideum, 0.1 cm. longum, tuberculis dense obtectum. *Stylus* angustus, 0.6 cm. longus. *Fructus* 1.1–1.25 cm. longi, 0.9–1.2 cm. lati, tuberculis e basi ad apicem attenuatis basi tomentosis dense obtecti. (Fig. 1).



FIG. 1. Fruit of *Triumfetta shinyangensis* Verdcourt, $\times 6$.

TANGANYIKA. Old Shinyanga, in and between native shambas near dam, 23 Apr. 1939, *P. E. Glover* 394 (EA). Tindi and Shinyanga, 1140 m., 13 Mar. 1932, *B. D. Burtt* 3748 (K) :—silvery leaved woody plant, 45 cm. high ; flowers yellow. Shinyanga, 1938, *Koritschoner* 1875 (EA), 1912 (EA, holotypus, K, isotypus), and 2058. Near Shinyanga, without precise locality, among low bushes fairly far apart in dryish veld, Feb. 1933, *R. D. Bax* 76 :—shrubby, 60 cm. high, with many stems from ground forming clumps ; flowers yellow. Mwanza District. Mbarika, Kwingwa, on hillside, 1140 m., 8 May 1953, *Tanner* 1398 (EA, K) :—height 90 cm., growing in clumps ; plants in fruit ; underside of leaves powdery. “Izwazwa Igosha” (Kisukuma).

This very distinct species is well characterised by its fruits the tubercles of which are much shorter than the diameter of the fruit core (Fig. 1). The only other species which has been observed to have a similar fruit is the apparently undescribed one represented by *Glover & Gilliland* 456 from Somaliland Protectorate, and this has very much smaller leaves. The young fruits of *T. shinyangensis* have the tubercles ending in a distinctly hooked spinule but by the time the fruit is mature many of these have broken off. The bases of the tubercles are softly pubescent with buff coloured hairs. B.V.

LEGUMINOSAE

Material of an undescribed species of *Pterocarpus* with characteristic fruits has steadily been accumulating in the Herbarium during the past 40 years. The time has undoubtedly come when a name should be

given to it. In fact we now have more material of this plant than a good many other quite well known species. Isotypes and cited specimens have been distributed to Kew and elsewhere.

Pterocarpus usambarensis Verdcourt sp. nov., ex affinitate *P. indici* Willd. sed leguminibus multo majoribus facile distinguenda.

Arbor magna, ad 40 m. alta. *Ramuli* glabri vel subglabri $\pm$ glauci, cortice nigro obtecti ; internodia $\pm$ 8 cm. longa. *Folia* alterna, imparipinnata, 7-11-juga, usque 26 cm. longa ; petiolus usque 8 cm. longus, leviter rugosus ; foliola ovata vel oblongo-elliptica, in siccitate plumbagineo-grisea, petiolulata, 5.2-13 cm. longa et 2.5-6 cm. lata, basi rotundata, apice acuminata, acumine 3-9 mm. longo obtuso mucronulato, nervis lateralibus 12-7 utrinque prominulis, venulis eleganter reticulatis, petioluli rugosi, supra leviter sulcati, 6 mm. longi. *Paniculae* pluriflorae, pilosae ; flores lutei, glabri. *Calyx* 3.5 mm. longus, extra glaber, lobis deltoideis 1-1.75 mm. longis intus apice ciliatis. *Vexillum* obovatum, 8 mm. longum et 8.5 mm. latum, apice emarginatum, basi in unguem 3.5 mm. longum productum ; alae ovatae, 6 mm. longae et 4 mm. latae, basi angustae et ibi 1 mm. latae ; carina ovato-oblonga, longe unguiculata, in toto 9.5 mm. longa (lamina usque 6 mm. longa) et 3 mm. lata, petalis liberis. *Stamina* 7 mm. longa, basi conjugata ; antherae circiter 0.4 mm. longae. *Ovarium* stipitatum, 2.7 mm. longum, stipite puberulo 3 mm. longo ; stylus 1.25 mm. longus. *Legumen* suborbiculare, stipitatum, valde compressum, glabrum, 8.5-12 cm. latum, chartaceo-alatum, parte centrali incrassata venosa 3-6 cm. lata, stylo mucronulato ad unum latus verso.

TANGANYIKA. E. Usambara Mts. Footslopes just W. of R. Kihuhwi, local in dry evergreen *Antiaris*, *Morus*, *Chlorophora*, *Terminalia*, *Lannea*, *Dialium*, *Xylopia* forest on brownish loam, 1000 m., 27 Jan. 1947, *Greenway* 7923 (EA, K) :—an evergreen tree to 20 m. with small rounded, dark green, dense crown ; bole slender, clean to 15 m. ; bark grey, smooth ; pods smooth, brown papery, 13 cm. major diam. 10 cm. minor diam. Kihuhwi, July 1947, *Omari Chambo* in *A.H.* 9932 (EA, K). Mlinga, very local (2 or 3 only) in *Isoborlinia*, *Parinari*, *Funtumia*, *Sterculia*, *Allanblackia* evergreen rain-forest, 600 m., 4 Dec. 1940, *Greenway* 6055 (EA, K) :—a deciduous tree up to 36 m. tall with a lightly branched conical crown and smooth light brown bark ; pods produced in large panicles, thin and glabrous. Kwekangara, Mlinga Mountain, rare in a ravine in evergreen rain-forest composed of *Parinari*, *Allanblackia*, *Sterculia*, *Alangium* and *Albizzia*, 600 m., 7 Dec. 1940, *Greenway* 6069 (EA, holotype, K, isotype) :—evergreen tree to 36 m. tall with a lightly branched, bushy crown ; bark smooth, buffish-yellow. Same locality, locally common in evergreen rain-forest as 6069, 600 m., 7 Dec. 1940, *Greenway* 6067, (EA, K) :—tree to 36 m. tall with clean bole up to 27 m. ; bark smooth, buffish brown ; “Mshira” Kishambaa. Mongubu, rare in *Piptadenia*, *Dialium*, *Cynometra*, *Khaya*, *Barringtonia*, *Parkia*, *Erythrophloeum guineense* fringing forest on banks of Sigi River, 21 Oct. 1936, *Greenway* 4692 (EA, K) :—tree to 23 m. tall with smooth grey bark, golden yellow flowers, and evergreen dark leaves. Bulwa, 14 July 1914, *Braun* 7129 (EA). Kwamkuyu Falls, *Zimmerman* 2567 (EA) :—very tall tree.

This species has the branches practically glabrous, save for a few hairs round the bases of the petioles. The fruiting pedicels are about 8 mm. long. The style emerges from the side of the fruit some 7–8 cm. from the stipe. There is no sinus between the style and the stipe but the wing is smoothly rounded. B.V.

EUPHORBIACEAE

Macaranga schweinfurthii Pax in Engl., Bot. Jahrb. **19**, 92 (1894).

This does not appear to have been recorded from Tanganyika but is to be expected.

TANGANYIKA. Bukoba, Rubare, in swamp-forest, 1330 m., July 1951, Eggeling 6238 (EA, K) :—tree to 10 m., with very large leaves, inflorescences on bare branches below foliage. B.V.

Spondianthus preussii Engl. var. **glaber** (Engl.) Engl. in Notizbl. Bot. Gart. Berlin **5**, 242 (1911).

This also is possibly a new record from Tanganyika.

TANGANYIKA. Munene forest, on swampy margins, 29 km. W. of Bukoba, 1170 m., July 1951, Eggeling 6245 (EA, K) :—tree to 12 m.; flowers very pale pink. B.V.

REVISION OF THE GENUS *ZIMMERMANNIA* PAX

The genus *Zimmermannia* was founded in 1910 for a species discovered in the Eastern Usambaras. A second species was not added until 1933 when Miss E. A. Bruce described *Z. ovata*. A third species was discovered at Mpwapa by Mr. H. Lindeman but the material is too poor to describe. Ample material of two very distinct species has recently been collected by Mr. S. Semsei (on the Rondo Plateau where he has discovered a considerable number of interesting new plants) and by Dr. W. J. Eggeling at Morogoro. These plants are here described. Yet another undescribed species was collected by Herr H. J. Schlieben in southern Tanganyika. The following key will serve to distinguish the species of the genus, with the exception of the Schlieben sheet which being in bud has been omitted.

KEY TO THE SPECIES OF *ZIMMERMANNIA*

- 1 { Sepals of ♀ flowers 0.5–0.7 cm. long 2
 - { Sepals of ♀ flowers 1–1.2 cm. long 4
- 2 { Leaves oblong-elliptic or ovate-lanceolate, up to 12 × 5 cm. . . . 3
 - { Leaves ovate, up to 7 × 3.8 cm., more rounded at the base
(2) *Z. sp. nov.*
- 3 { Leaves oblong-elliptic, petioles short, 5 mm. long . . (1) *Z. capillipes*
 - { Leaves ovate-lanceolate, petioles 7–18 mm. long . . (3) *Z. acuminata*
- 4 { Leaves ovate, rounded at the base, up to 7.5 × 5 cm.; small tree to
5 m. tall (4) *Z. ovata*
 - { Leaves elliptic to oblong-lanceolate, rounded or cuneate at the base,
up to 15 × 5.5 cm.; shrub to 2 m. tall . . (5) *Z. grandiflora*

1. *Zimmermannia capillipes* Pax in Engl., Bot. Jahrb. **45**, 235 (1910).

This species is a tree about 8 m. tall and is uncommon in the E. Usambaras rain forest.

TANGANYIKA. Amani, Nderema, 900 m., 4 April 1939, *Greenway* 5862 (EA, K) :—much branched evergreen tree 8 m. tall with large green ♂ flowers with a large fleshy disc and solitary ♀ flowers at the ends of the branches. "Kiseza mzitu" (Kishambaa). Amani Arboretum, *Grote* 6900 (EA) and 7 Mar. 1922, *Soleman* 6106 (EA, K). Monga, 27 Dec. 1916, *Zimmermann* 6901 (EA, K). Amani, by R. Dodwe, 900 m., Oct. 1908, *Zimmermann* 2547 (EA, isotype) :—shrub.

2. *Zimmermannia* sp. nov.

Further material of this plant is needed before it can be described. It is close to *Z. ovata*, but has smaller flowers.

TANGANYIKA. Mpwapwa, January 1937, *Lindeman* 245 (EA, K) :—a small shrub.

3. *Zimmermannia acuminata* Verdcourt sp. nov.; a congeneribus folii ovato-lanceolatis acuminatis, 2·5–12·5 cm. longis et 1·4–4 cm. latis, manifeste petiolatis, petiolis 7–18 mm. longis, calycis lobis ♀ 5 mm. longis distincta.

Suffrutex glaber, 0·9–1·8 m. altus. *Ramuli* novelli virides, deinde cortice griseo obtecti. *Internodia* 1–4 cm. longa. *Folia* supra viridia, subtus albo-grisea; lamina apice acuminata, basi rotundata vel leviter cuneata, margine integra; nervi laterales utrinsecus 8–9, arcuati. *Stipulae* foliaceae, oblong-orbiculatae, apice manifeste mucronatae, 5 mm. latae et 4 mm. longae. *Flores* monoici, in axillis foliorum dispositi, pedicellati; inflorescentiae 1–4 florum. *Flores* ♂ pedicellis gracilibus apice leviter incrassatis ad 2 cm. longis, sepalis 5 orbiculatis 2·2 mm. longis et 3 mm. latis, filamentis 5, 1·8 mm. longis, antheris 0·5 mm. longis, disco plano rotundato 3·5 mm. diametro. *Flores* ♀ pedicellis 2·2–3 cm. longis, sepalis 5 orbiculatis 4–5 mm. longis et latis venosis, ovario 1–2 mm. longo, stylis 3, 1·2 mm. longis stigmatibus bifidis, disco plano appanato 4 mm. diametro. *Capsula* trilobata, 7 mm. longa; semina nigrescentia, rugosa, 6 mm. longa et 3 mm. lata.

TANGANYIKA. Morogoro District, Uluguru Mountains above Morning-side, in forest, 1560 m., Jan. 1953, *Eggeling* 6464 (EA, holotype, K, isotype) :—flowers pale greenish-white, pendulous; leaves grey-green below; and June 1953, *Semsei* 1279 (EA, K, paratype) [N.B. Abundant material is available for distribution] :—a very common shrub.

4. *Zimmermannia ovata* E. A. Bruce in Kew Bull. **1933**, 468 (1933).

So far as I am aware this species has never been recollected. It is a small slender tree about 5 m. high, but the collector notes that it may grow larger.

KENYA. Teita Hills, Ngangao, in mist-forest undergrowth, 1350 m., Sept. 1932, *Gardner* 2909 (K, holotype, EA, isotype) :—sepals green, flowers pink, fruits reddish brown turning purple. "Mubaki" (Teita), "Rufichu" (Teita).

5. **Zimmermannia grandiflora** Verdcourt sp. nov., affinis *Z. ovatae* E. A. Bruce, foliis majoribus oblongis vel oblongo-lanceolatis usque ad 15 cm. longis differt.

Frutex parvus, glaber, circiter 2 m. altus, ramulis viridibus. *Internodia* 1-2.5 cm. longa. *Folia* petiolata, petiolis 8.5-10 mm. longis; lamina elliptica vel oblongo-lanceolata, 5.5-15 cm. longa et 2-5.5 cm. lata, chartacea, apice acuta basi rotundata vel leviter cuneata, margine integra; nervi laterales utrinsecus 7-12, adscendentes, arcuati. *Stipulae* deciduae, foliaceae, ovato-deltaeae, apice acuminatae, 1 cm. longae et 0.8 cm. latae. *Flores* monoici, flavi, in axillis foliorum dispositi. *Flores* ♂ pedicellati, pedicellis 3 mm. longis, sepalis 5 ellipticis 2.8-4.5 mm. longis et 4-6 mm. latis haud ciliatis, staminibus 5, antheris 1.2 mm. longis subsessilibus, filamentis 0.5-1 mm. longis e disco ortis et adpressis, disco undulato 4.3 mm. diametro papilloso. *Flores* ♀ longe pedicellati, pedicellis usque 2 cm. longis, sepalis 5 rotundato-obovatis 1.2 cm. longis et 1-1.3 cm. latis venosis, ovario 1.5 mm. longo, stylis 3 basi connatis 2.5 mm. longis, stigmatibus bifidis, disco plano applanato 7.5 mm. diametro leviter papilloso. *Capsula* ignota.

TANGANYIKA. Lindi District, Rondo Plateau, Mchinjiri, Mar. 1952, *Semsei* 676 (EA, holotype K, isotype) :—yellow-flowered shrub to 3 m. high growing in bush formations. "Makongola" (Kimwera).

6. **Zimmermannia** sp. nov.

This sheet is in young bud and insufficient for description. It differs from *Z. capillipes* in not having numerous ♂ flowers in fascicles and from *Z. acuminata* in its shorter petioles.

TANGANYIKA. Mahenge, mist-forest at Sali, 1100 m., 18 Mar. 1932, *Schlieben* 1904 (BR, K) :—shrub 3-4 m. by stream side, frequent. B.V.

SIMAROUBACEAE

Clainedoxa gabonensis Pierre in Bull. Soc. Linn. Par. 2, 1235 (1896).

This highly characteristic plant does not appear to have been recorded from Tanganyika.

TANGANYIKA. Munene forest, 29 km. W. of Bukoba, 1300 m., July 1951, *Eggeling* 6253 (EA, K) :—sterile material from young tree 6 m. high, showing the unmistakable stipules, with bole heavily armed with spines; a nearby mature tree was 40 m. high with huge rounded crown. B.V.

UMBELLIFERAE

When the late Mr. C. Norman revised the material of the genus *Peucedanum* from the herbarium of The East African Agricultural and Forestry Research Organisation, Amani, he annotated *Burt* 1034 and *Burt* 1189 as "an undescribed plant—what is it?" The good fruiting material subsequently collected shows it to be a new species of *Peucedanum* which is here described.

Peucedanum canaliculatum Verdcourt sp. nov. ab omnibus speciebus africanis adhuc descriptis, foliis bis vel ter trifoliatis et foliolis trifidis facile distinguenda.

Herba perennis ad 1 m. alta, caule striato. *Folia* basalia bis vel ter trifoliata; lamina usque ad 15 cm. longa, cum petiolo usque ad 20 cm. longo; foliola trifida, segmentis lanceolatis acutis usque ad 7 cm. longis et 0.9 cm. latis, saepius remote incisis, margine crassis et minutissime tuberculatis; folia caulina superiora subsessilia, trifoliata vel trifida, ad 3.5 cm. longa. *Umbellae* 10–14-radiatae; radii striati, minutissime tuberculati, 1–3 cm. longi (sub anthesin) 3.5–8 cm. longi (fructiferi); pedicelli 10, striati, saepius minute tuberculati, $\pm$ 0.5 cm. longi (sub anthesin) et ad 1.0 cm. longi (fructiferi). *Involucri et involucelli phylla* minuta, lineari-lanceolata. *Calyx* tubo 0.1 cm. longo; lobi anguste deltoidei, 0.05 cm. longi. *Petala* 5, alba, ovata, acuminata, 0.25 cm. longa (in toto) et 0.125 cm. lata, apice manifeste inflexa, margine crenulata. *Stamina* 5 incurvata, filamentis 0.1 cm. longis, antheris 0.07 cm. longis. *Stylopodium* conicum, basi dilatatum undulatum 0.15 cm. latum. *Styli* 0.05 cm. longi. *Fructus* oblong-ellipticus, 1.0–1.3 cm. longus et 0.6–0.95 cm. latus, basi et ad apicem leviter emarginatus; alae 0.15–0.25 cm. latae, membranaceae. *Semina* circiter 0.7 cm. longa et 0.4 cm. lata, dorso tricostata; vittae dorsales 12, commissurales 4–6.

TANGANYIKA. Mbulu District, Mbulumbul, Block AG, common but scattered in *Oldenlandia abyssinica*, *Pentanisia ouranogyne*, *Orthosiphon*, *Cyphia glandulifera* association with *Polygala usambarensis*, *Ajuga bracteosa*, *Indigofera volkensii* *Amaranthus blitum*, *Aspilia*, and *Acalypha indica* on a very dark loam of volcanic origin on a gentle slope planted to wheat which had been eaten out by army worm and not replanted, 1530 m., 23 June 1944, *Greenway* 6927 (EA, holotypus, K, isotypus):—white-flowered perennial herb up to 75 cm. tall. Same locality, locally common but scattered in stands of *Athroisma hastifolium*, *Amaranthus tricolor*, *Cynodon dactylon*, and *Digitaria scalarum* in a recently abandoned cultivation area on a black loam of volcanic origin, 1890 m., 26 June 1945, *Greenway* 7479 (EA, K):—perennial herb, not much branched, up to 90 cm. tall with umbels of white flowers. Same locality, locally common but scattered in *Themeda triandra*, *Hyparrhenia hirta* upland grassland in a heavy black clayey loam of volcanic origin, 1950 m., 17 June 1946, *Greenway* 7758 (K). Mbulu District, rift wall near summit between Mbugwe and Mbulu, in grass savannah, c. 1800 m., 15 Jan. 1927, *B. D. Burtt* 1817 (K). Masai District. Monduli, without data, *Rowe* 12 (EA, K). Kondo District. Simbo Hills near Simbo Camp, in black soil among young grass and *Acacia drepanolobium* trees, c. 1380 m., 8 Jan. 1928, *B. D. Burtt* 1034 (EA, K). Kondo District, hills above Kolo, in grass savannah, c. 1500 m., 5 Jan. 1928, *B. D. Burtt* 1189 (EA, K).

The stem, which is 6 mm. in diameter at the base is prominently grooved and appears quite glabrous to the naked eye or under a low power, but when examined under a high power it is seen to be covered with minute tubercles. The upper leaves are usually trifoliate, the two lower leaflets linear and the central leaflet with a small upwardly directed lobe or tooth on each side. The lower leaves are twice or thrice trifoliate, with the leaflets deeply trifid. The middle segments usually bear an upwardly directed acute lobe or tooth on either side whereas the lateral lobes have a tooth on the outer side only. The foliage whilst

characteristic is rather variable. The radical leaves form a lax rosette at the apex of the rootstock (which is not preserved, save for the extreme apex, on any of the sheets). The petioles, petiolules, radii, and pedicels all bear minute tuberculae similar to those on the stem except that those on the pedicels are often much larger and visible under an ordinary lens. The fruits vary a little in shape and some are slightly obpyriform. Near the base of the wings of each mericarp is a wavy hyaline line, and dorsally the seed is divided into four longitudinal areas by the three prominent ribs and in each space there are three more or less complete dark-coloured vittae. On the ventral surface there are 4-6 commissural vittae, of a similar dark colour.

Norman in his revision of the African species of the genus (J. Linn. Soc. Bot. **49**, 503-516 : 1934) separates those species which have the stems and rays densely muriculate into a section *Muriculata*. Whilst the present species has tuberculate stems they are not sufficiently so to warrant the placing of the species in this section. Many of the other species which Norman includes in other sections have minutely roughened stems. It will not easily fit into any of the remaining sections unless it be considered an aberrant member of the section *Crenato-serrata*. It bears some relationship to *P. eylesii* Norman but differs in having no proper serrations on the leaf margins. It would seem to be intermediate between the sections *Crenato-serrata* and *Runssorica*. B.V.

OLEACEAE

***Linociera johnsonii* Baker** in F.T.A. **4** (1), 20 (1902).

This species is not recorded for Tanganyika in **Flora of Tropical East Africa : Oleaceae** (1952).

TANGANYIKA. Munene forest, 29 km. W. of Bukoba, 1300 m., July 1951, *Eggeling* 6244 (EA, K) :—Understorey tree to 6 m. ; flowers white, strongly sweet-scented. B.V.

CONVOLVULACEAE

***Cuscuta kilimanjari* Oliver var. *major* Verdcourt** var. nov. ; a typo floribus majoribus ad 6 mm. longis et 8 mm. latis distinguatur.

UGANDA. Kigezi, Bufumbira, Maziba, volcanic plains, 2000 m., Mar. 1949, *J. H. Purseglove* 2715 (EA, holotype, K, isotype) :—cream-coloured parasite on *Clematis* sp. and other shrubs.

This plant appears at first sight to be quite different from *C. kilimanjari* Oliv. (Trans. Linn. Soc., Ser. 2, Bot., **2**, 343). A careful examination of the flowers reveals however that the only differences lie in the size of the floral parts and in the more prominent scales. The flowers are about 8 mm. broad and 6 mm. long, the length of the corolla being 5-6 mm. In the typical form the corolla rarely exceeds 4 mm. The corolla lobes in var. *major* are unequally broad and 2 mm. long. The calyx lobes are blunt and rounded, up to 5 mm. long. The total diameter of the calyx when flattened out is about 9 mm. The scales are not very thin, and reach to the base of the filaments. The adnate portion is triangular, and the bridge about 1.3 mm. above the bottom of the corolla tube. The fringed portion is wide.

It is worth noting that Oliver's original description of *C. kilimanjari* is quite erroneous. He states that there are no scales, but an examination of his type shows that quite prominent scales are present. This faulty diagnosis has led to most of the *C. kilimanjari* in herbaria being determined as *C. cordofana* (Engel.) Yunck. or *C. obtusiflora* H.B. & K. The Flora of Tropical Africa (4 (2), 202–206 : 1906), in which the treatment of the genus as a whole is very unsatisfactory, uses the absence of scales as a key character (though admitting that small scales are sometimes present !) and thus places *C. kilimanjari* Oliv. next to *C. hyalina* Roth. (= *C. epitribulum* Schinz), a species with which it has practically nothing in common.

There have been many instances of much confusion having been caused by inability of some botanists to see the scales of dodders and varieties have been proposed when careful observation would have shown that scales were indeed present. It is very necessary to use a binocular dissecting microscope when determining dodders. B.V.

A Survey of Modern Horticulture.*—A reader skimming lightly through the report of the thirteenth international horticultural congress which took place in London from September 8th–15th, 1952, might reasonably feel awed by the wealth and diversity of the subjects discussed. The 2 handsome volumes in which the report is embodied, besides a list of members who were present, and accounts of the opening and closing plenary sessions, includes some 30 pages devoted to the thorny problem of an international code for horticultural nomenclature, and resumé of 145 technical communications. It ends with a brief description of a symposium on botanic gardens and a list of excursions. The technical communications naturally take up the greater part of the 2 volumes, and, at the end of nearly every article, besides the English summary there is one in French. The very numerous approaches to modern horticulture are largely a result of the attempt to apply basic scientific knowledge to the solution of practical problems. Thus many of the papers were concerned with the part played by genetics and plant breeding in building up disease resistance in crops and in raising supposedly more decorative or higher yielding varieties of plants. Much attention was devoted to applied physiology, especially in the realms of mineral nutrition, the control of flowering, selective weed killers and vegetative propagation. Up to date, or comparatively modern, developments in engineering are being applied to the control of frost in orchards by the use of fans, to the large scale application of chemicals to crops by the use of helicopters, whilst irrigation is enabling ever increasing areas in dry regions to be brought under cultivation. The mass of information on these and other topics provides much food for thought. For example a student brought up on textbook physiology will ponder when he learns that experiments with

* Report of the thirteenth International Horticultural Congress 1952. Edited by Patrick M. Syngé. Vol. I. xv + 573 pp. ; Vol. II, viii + 720 pp. Published by the Royal Horticultural Society, 1953.

radioactive isotopes have shown that mineral substances applied to the bark of a dormant apple tree are not only absorbed by, but move upwards and downwards in, the branches even when the air temperature is well below freezing point. Similarly the propagator with "green fingers", will pause when he is told that Cacao cannot be propagated from cuttings to the best advantage unless optima for the light intensity, available water supply, the nature of the rooting medium, the balance of mineral fertilizers, the age of the parent tree and the stage of development of the shoots are first worked out. Even when this has been done for propagation in one locality, it may well prove that another combination or circumstances will give better results elsewhere. So we see no finality in horticultural technique. New ages and new situations bring new problems, and the struggle of man to control and exploit his environment is ceaseless. To the reviewer it appears that the horticulturalist who regards cultivation as an art as well as a science is likely to attain greater success than one whose outlook is exclusively scientific. For, although the application of science to horticulture has undoubtedly conferred great benefits in improving the traditional methods of good husbandry, it is equally true that, if some of the tendencies in modern horticulture are carried to their logical conclusions, it might become impossible for any one individual to grow a good turnip without first consulting a host of specialists. Professor F. G. Gregory reminded his audience in a general lecture to the congress that "inspired guesswork" is an essential element in scientific method. This applies also to good horticultural practice and is a useful point of contact between the two disciplines. The report provides ample evidence of the value of collaboration between scientist and gardener, and it is to be hoped that, in the future, their combined endeavours will enable a clear course to be followed between stagnation due to the rigours of tradition and the disintegration that would follow excessive specialization.

C. R. METCALFE.

The Housing Estate Garden.*—This handy little book is designed to assist householders in the development of their gardens. The author is fully qualified to write on such gardens, having had considerable experience of the subject and gained many prizes for his own garden in addition to being a successful exhibitor at horticultural shows.

The book gives cultural details of the flowers, fruit and vegetables which can normally be grown and provides names of recommended varieties. It is illustrated by a number of line drawings and is provided with an index. This is a useful book which will be of interest to the many who will be able to learn from it how to find pleasure in cultivating their gardens.

H. S. MARSHALL.

* *The Housing Estate Garden.* By S. J. Poole. London: W. H. & L. Collingridge Ltd. New York: Transatlantic Arts Inc. 1953. Pp. 111. Price 7/-.

A NEW AUSTRALIAN HEPATIC.

JANE TAYLOR.

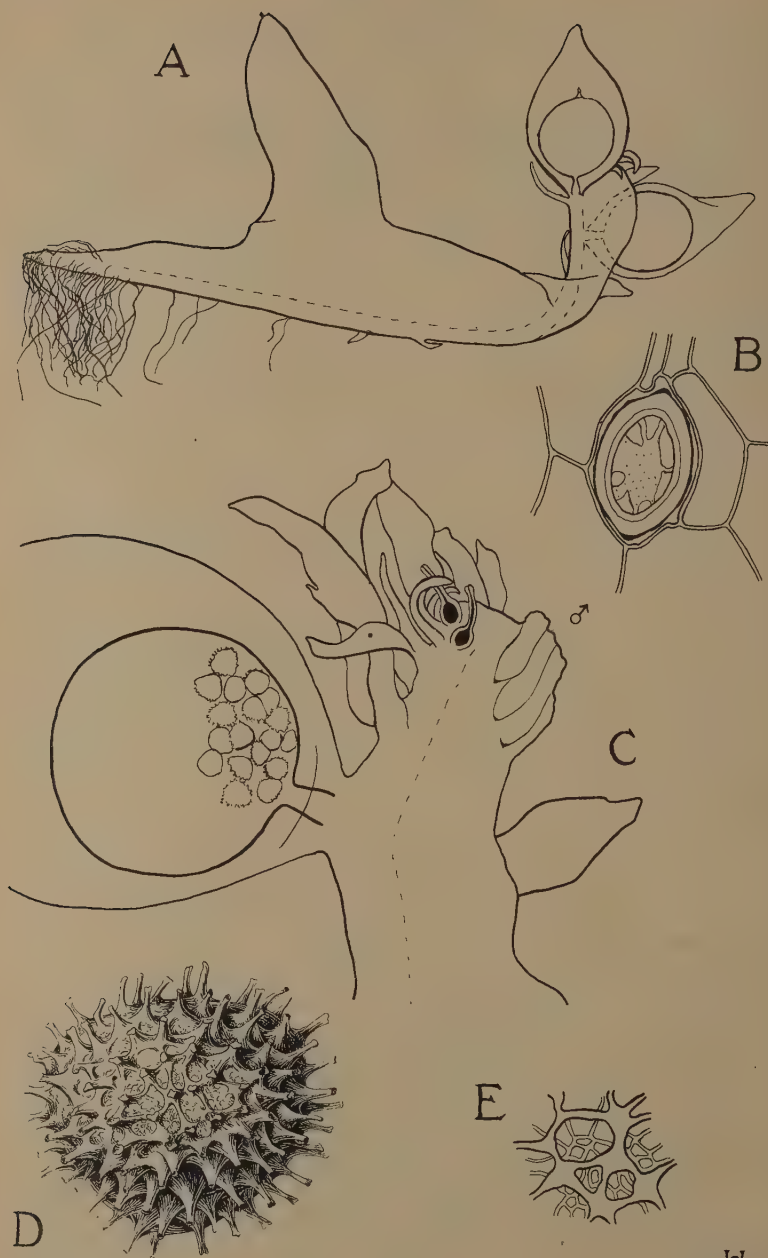
Riella spiculata *f. Tayl.*, sp. nov. *Monoica*. **Frons** repens ad apicem ascendens 5–9 mm. longa, plerumque simplex. **Costa** 0.1–0.4 mm. diametro, paulum compressa; ala unilaterialis videtur, 0.5–0.8 mm. lata, $\pm$ complanata, *excrecentia laterali mediana* saepe undulata praedita. **Rhizoides** per totam longitudinem costae praecipue subtus exorientes, ad apicem et ad basim numerosissimae et longissimae. **Squamae costales** praecipue insuper sat numerosae, variabiles, 0.3–0.5 mm. longae, lanceolatae vel lingulate, apice acuminato vel obtuso. **Antheridia** in margine alae immersa. **Involucra** apice frondis fasciculatim disposita, ovoidea acuminata, 2.0–2.5 mm. longa, superficie laevia. **Sporangium** subglobosum, caule brevi. **Sporae** quaternatim dispositae subisopolares, circiter 80μ diametro latissimo (spinis exclusis), facie exteriore $\pm$ leviter reticulatae; *spinae graciles*, circiter 12.5μ longae, 4.1μ latae ad basim et 1.6μ ad apicem. (p. 46, figs. A–E).

Monoicous. Thallus procumbent with ascending apices 5–9 mm. long, densely caespitose, simple; axis flattened 0.1–0.4 mm. diameter, rhizoids borne on the whole length, prolific at distal and often at proximal extremities, long, hyaline; wing appearing unilateral, (the plant is bilaterally symmetrical in the plane of the wing) rounded at apex and with a median lateral outgrowth of diameter 2.5–3.0 mm. frequently undulate, towards base slightly tapering; cells at $\frac{1}{3}$ from apex quadrate—hexagonal $45\text{--}50\mu$, basal elongated, rectangular; scales lanceolate or linguiform with acute or obtuse apices, 0.3–0.5 mm. long. Antheridia immersed in the wing, grouped in marginal sinuses; sporogonia 2–5 maturing in acropetal order; involucres ovoid-acuminate, smooth, 2–2.5 mm. long.

Spores, dark brown, “mature spores, nonaperturate subisopolar, subtriangular-circular in polar view, provided with conspicuous excrescences; spore diameter (acetolysed spores from material preserved in formalin) 80μ excrescences not included; 99μ excrescences included), exine thickness about 3.1μ ; excrescences longer and more slender than in *Riella halophila* Banwell (length of equatorial excrescences about 12.5μ breadth at base about 4.1μ , just below the apex about 1.6μ) mean distance between excrescences about 8.8μ ; centre of one of the two spore faces (the proximal face?) provided with a more or less fine meshed reticuloid pattern, excrescences of this face larger than those of the other face and usually interconnected by low, slightly muroid (i.e. similar to the ridges “muri” of a reticulum) ridges; several spores exhibit artificial cracks, more or less similar to triradiate markings.”

Australia, Victoria, Portland, Etterick, Darlot's Creek Sanctuary; 15-X-1952, *R. Melville* 1677 typus (in Herb. Kew.); fresh-water marsh on black peaty mud with *Pilularia novae-hollandiae*, *Isoetes drummondi*, etc.

The plant differs from *R. halophila* Banwell, the only Australian species of the genus hitherto recorded in the longer and more slender excrescences and in being monoicous. In this latter character it shows affinity with *R. affinis* Howe & Underwood.



Riella spiculata J. Tayl. A, thallus with sporogonia ($\times 11$); B, endophytic algal cell ($\times 1040$); C, apex of thallus showing sex organs (empty antheridial cavities at ♂) and capsule ($\times 38$); D, mature spore ($\times 520$); E, centre of outer spore face ($\times 1040$).

An interesting phenomenon is the occurrence of an algal endophyte throughout the wing. The relationship appears to be similar to that of *Chlorochytrium lemnae* Cohn in the leaves of *Bryum pseudotriquetrum* as reported by Bristol (1920). The alga is in the resting stage and almost certainly belongs to the genus *Chlorochytrium*. Endophytes have been reported in *Hypnum*, *Sphagnum* and such phanerogamic genera as *Elodea* and *Potamogeton* but a search through the literature has not so far revealed another hepatic genus. All species of *Riella* are likely hosts but if such an association has been hitherto observed in this genus it does not appear to have been recorded in literature.

In conclusion I wish to express my thanks to Prof. G. Erdtman who supplied the detailed spore diagnosis, to Miss S. S. Hooper for the drawings illustrating this description, to Mr. G. Atkinson for much advice on Plate I, to Miss C. I. Dickinson for help in the identification of the endophytic alga, to Dr. R. Melville for suggesting the specific epithet, to Mr. N. Y. Sandwith for assistance with the latin diagnosis, and to Mr. A. D. Banwell and Mr. A. W. Jessep for the loan of type material of *Riella halophila*.

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Flora of Bedfordshire.*—In an increasing number of animals, zoologists are recognizing the importance of territory as a factor influencing behaviour, life-history, and even evolution. In the human species ownership and co-ownership take many forms, not all of which are material. Botanists often restrict themselves to territorial fields of study ranging from a limited taxonomic group or a special subject methodologically circumscribed to investigations within a defined geographical area. British (and particularly English) botanists studying native plants and more or less established aliens have been prone to restrict themselves to a county or vice-county. There are many advantages in doing this. The area involved is large enough to show considerable environmental and floristic diversity and is yet sufficiently small and compact for every part to be visited personally within a reasonable number of years. One result of our county mentality has been the preparation and publication of numerous "county floras" the majority of which show a uniform basic pattern with variations connected with the idiosyncrasies of the author or editor and the cost of publication.

The latest addition to our county floras is that of Bedfordshire, prepared, with the help of some specialists and of many co-workers, by Dr. John G. Dony and published by the Luton Museum. Dr. Dony is to be congratulated on the completion of a work begun eighteen years ago and the county can be proud of a "Flora" which in every sense is its own product, for not only does it deal with the local plant life but it was printed in the county and published by a local authority.

There are several specially interesting features of the new Flora. The history of the study of Bedfordshire botany is reasonably full as are also the accounts of the environmental factors. These latter are less diverse than in many counties. The greatest altitude is only 796 ft. The county is, of course, entirely inland. The solid geology is restricted to Jurassic and Cretaceous rocks. Dr. Dony gives a series of 96 "habitat studies" in which are described in some detail a number of plant communities typical of the flora of the county. Essentially these studies are concise ecological descriptions of selected habitats. They are illustrated by some excellent photographs.

The "Flora" proper includes the *Charophyta*, *Bryophyta*, and *Fungi*, as well as the *Pteridophyta*, and *Spermatophyta*. It follows the general well tested principles of British county floras in providing in systematic sequence a sufficiently detailed record of the occurrences of the species, and sometimes paramorphs, found in the county. This is the first county flora to appear since the publication of Clapham, Tutin, and Warburg: *Flora of the British Isles*, and references are given to this work. One notes a number of nomenclatural changes or révisions about which one would like to have details. For example *Silene cucubalus* again becomes *S. vulgaris*.

There is a separate account of "Casuals, Garden Escapes, etc." but many aliens are included in the body of the Flora. The work is well indexed, with an Index of Botanists, a Geographical Index, an Index of Plant Names, and a List of Subscribers. The Director of the Royal Botanic Gardens, Kew, Sir Edward Salisbury, contributes an appropriate Foreword.

W. B. TURRILL.

* John G. Dony, *Flora of Bedfordshire*, published by the Luton Museum, 1953, pp. 532, plates 25, £2.2.0.

A NEW SUBSPECIES OF DIANTHUS ANGOLENSIS FROM EAST AFRICA.

W. B. TURRILL.

***Dianthus angolensis* Hiern ex Williams subsp. *orientalis* Turrill subsp. nov.** a *D. angolense* Hiern ex Williams subsp. *angolense* foliis latioribus, bracteis oblongis ellipticis vel obovato-ellipticis apice mucronatis vel breviter acuminatis, petalis albis praecipue distinguitur.

Herba perennis. *Caules* caespitosi, basi fere suffrutescentes, usque ad 6.2 dm. alti, rigide erecti, teretes vel ima basi obscure quadrangulares, internodis usque ad 7 cm. longis et 3 mm. diametro glabris. *Folia* anguste oblanceolato-linearia, apicem versus gradatim angustata, apice acuta vel breviter acuminata, 2-6 cm. longa, 1-9 mm. lata, in pagina utraque glabra, nervis principalibus 3-5, margine in parte inferiore leviter ciliata; vagina 8-10 mm. longa, 2-3 mm. diametro. *Inflorescentia* elongata, floribus 5-10, 1.5-2.1 dm. longa, ramosa, ramis lateralibus laxis gracilibus 2-7 cm. longis plus minusve compressis caniculatisque angulis ciliato-serratis; bractee inferiores foliis subsimiles sed breviores angustioresque; bractee calycinae 8-10, concavae, margine brevissime ciliatae; infimae oblongae, basi connatae, 5 mm. longae (arista 1.5 mm. longa inclusa), 2.5 mm. lata, margine hyalina; mediae oblongo-ellipticae, ima basi connatae, 7-9 mm. longae (mucrone 0.5 mm. longo incluso), 3.75-4 mm. latae, margine anguste hyalina; supremae ellipticae vel obovato-ellipticae, ima basi vix connatae, 10 mm. longae (mucrone 0.5 mm. longo incluso), 6 mm. lata, margine angustissime hyalina. *Calyx* cylindricus, 1.8 cm. longus, 3.5 mm. diametro, glaber (dentibus exceptis), nervis tenuibus 40-50; dentes lanceolati, 5 mm. longi, 2 mm. lati, papilloso. *Petala* 2 cm. longa, alba, lamina 7 mm. lata subtruncata apice brevissime dentata. *Antherae* fere 3 mm. longae; filamenta 1.3 cm. longa. *Ovarium* 5 mm. altum, 2.5 mm. diametro; styli 8 mm. longi.

TANGANYIKA. Ufipa District, Chala-Nkunde, 1800 m., rocky hilltop with high grasses, 5.4.1950, *A. A. Bullock* 2846 (Typus in Herb. Kew.), stiffly erect, flowers white; Chunya District, Lupa area, 1200 m., May, *Mrs. Pollock* 11; Mbeya District, Unyika, Mkhoma, 1500 m., 14.3.32, white flowers, *R. M. Davies* 383; Ufipa District, Ufipa Plateau, Mwazy, 1800 m., 20.4.34, common on stony hillside in *Brachystegia* woodland, flowers white, *A. P. G. Michelmores* 1039.

NORTHERN RHODESIA. 40 miles S.E. of Kasama on Great North Road, 1350-1560 m., 6.4.32, *G. W. St. Claire Thompson* 1265, "vleis" or "dambos" with shortish grass 2-3½ feet and few herbs, poor sandstone soil, rainfall 40-50 inches, pale yellow flowers, erect herb to 3 feet, rather gregarious, locally fairly frequent, generally distributed between Kasama and Kanona; Senga Hill in *Brachystegia* woodland, 1500 m., 6.6.36, common white flowered herb, *B. D. Burt* 6126.

The new subspecies of *Dianthus angolensis* here described has a known range restricted to southern Tanganyika and north eastern Northern Rhodesia between 1200 and 1800 m., in grasslands and open spaces in woodlands.

D. angolensis Hiern ex Williams, is a species placed by Williams (Journ. Linn. Soc. Bot. 29, 447: 1893) in subgenus *Caryophyllastrum*, sectio

Imparjugum, subsectio *Stenolepides*. Williams's classification is, at least in parts, very artificial in that it is based on a limited number of selected characters to which undue weight is sometimes given. Very little attention appears to have been paid to geographical range or to ecological distribution. In many characters, *D. angolensis* subsp. *orientalis* agrees with *D. angolensis* subsp. *angolensis*, from Angola and north western Northern Rhodesia and in geographical ranges the two are nearly juxtaposed but, so far as is known, nowhere overlapping; yet in Williams's classification *D. angolensis* subsp. *orientalis* can scarcely be placed (e descriptione) in the subsection *Stenolepides* because of the shape of the calycine bracts, since they are not "angustae acuminatae". Indeed, the description of the subsection *Platylepides*, "bracteae latae mucronatae", would better fit *D. angolensis* subsp. *orientalis*. The species classified by Williams into the two subsections do not, however, conform well with his differential diagnoses and it is evident that a monographic study is badly needed to revise the taxonomy of this portion, at any rate, of the genus.

Burt Davy, in Kew Bull. 1922, 209-23, published "A revision of the South African species of *Dianthus*". On pp. 221-2 of this revision, he comments on the geographical ranges of African species of the genus. Only three species were known from Tropical Africa—*D. longiglumis* and *D. leptoloma* from Abyssinia and *D. angolensis*. Burt Davy remarks "As in the case of *Salix*, the genus appears to have reached South Africa by way of the high mountain ranges of Eastern Tropical Africa". This may be so, but there are the two facts to be explained:—

1. That we have so far no records of *Dianthus* from "the high mountain ranges of Eastern Tropical Africa", that, indeed, there is, on present knowledge, a gap in the generic range between Abyssinia and southern Tanganyika; and
2. that *D. angolensis* subsp. *angolensis* and subsp. *orientalis* are not plants of "high mountain ranges".

The reasons for classifying the specimens from Tanganyika and Northern Rhodesia as a subspecies of *D. angolensis* and not as a distinct species are that apparent intermediates occur and that the diagnostic characters are not always strictly correlated. On the whole the differential characters coincide with geographical range very clearly and the eastern and western subspecies as here accepted are with the exception of only a few specimens sharply definable. The following specimens, however, deserve special comment: *G. W. St. Claire Thompson* 1265 has the petals "pale yellow" according to the field note. This character may have been scored from fading flowers. *Kassner* 2865, Lufuka River, Belgian Congo, bank of river, 25.5.1908, has the foliage and general habit of *D. angolensis* subsp. *orientalis* but the calycine bracts are in shape mostly more like those of subsp. *angolensis*. A sheet in the herbarium of the British Museum (Natural History Museum) from Tanganyika, Chunya District, East Rukwa, 900 m., April 1938, *D. Maclunes* 298, has the leaves up to 9 mm. broad but the calycine bracts in shape verge towards those characteristic of subsp. *angolensis* and the flowers (petals) are described as "white shading to pale pink". It is to be hoped that specimens will be collected in the area between the present known ranges of the two subspecies as here accepted. It is possible that there may be a cline linking eastern and western extremes of character development and correlation.

NOTES ON ASIATIC GRASSES : XV.

Triplopogon Bor, a new Genus of Indian Grasses.

N. L. BOR.

Hooker described *Ischaemum spathiflorum* from a solitary specimen collected by Jacquemont "in lapidosis fertilibus sylvarum in montosis excelsioribus insulae Salsette" which had been distributed from Paris as a *Trachypogon* to which Munro gave the name *T. fasciculatus* in MSS. This remained the sole collection until Birdwood collected it again in Khandala, Bombay, in October 1897. Father Blatter and McCann collected this plant on several occasions after the first world war, and recently Father Santapau, S.J., Rector of St. Xavier's College, Bombay, sent me several gatherings that he had made in Khandala and at Mumbra near Bombay. From one of these gatherings I was able to obtain ripe seed which developed into a fine plant in one of the tropical houses in the Gardens.

As stated, Munro placed this grass in the genus *Trachypogon* but did not give a description. Hooker described the plant as *Ischaemum spathiflorum* and placed it in the section of that genus called by Hackel *Sehima* after Forsskål's genus of that name, a genus which Hackel had sunk in *Ischaemum*. Hooker was not too happy about his disposal of the species for he remarks, "a very curious species, of which the materials are in a very young state ; it should form a section by itself of *Sehima* were that genus to be restored". Subsequently Forsskål's genus was revived, and it was natural that this species should have been referred to *Sehima* by Blatter and McCann.

Against this, however, we have Hooker's opinion that this "very curious species" should be placed in a special section of its own in the genus *Sehima*. Hooker, who was a very keen observer, obviously recognised that the species was something apart if not unique in the genus *Sehima*. That this is so I shall now proceed to show, and this is best done in tabular form.

<i>Sehima</i>	<i>Ischaemum spathiflorum</i>
Erect from the base.	Stilt-rooted with stem supported above the ground.
Leaves moderately broad, rounded at the base.	Leaves very broad, up to 3.5 cm. wide, narrowed, almost petioled at the base.
Ligule a ring of hairs.	Ligule membranous.
Inflorescence a terminal raceme.	Inflorescence of many spatheate pedunculate racemes issuing fan-wise from the upper nodes of the stem and its branches.
Articulations of raceme-axis oblique.	Articulations of raceme-axis not oblique.
Lower floret of the sessile spikelet ♂, the upper ♀.	Lower floret of the sessile spikelet ♂, the upper ♀.

Pedicelled spikelet dorsally compressed ; lower glume flat on the back, few- but strongly-nerved ; florets ♂ or lower neuter.

Pedicelled spikelet terete ; lower glume terete, many-nerved ; florets absent or one ♂.

Grain elliptic-oblong, dorsally compressed with a shallow groove on the adaxial surface at the bottom of which is the circular hilum, convex on the abaxial surface ; embryo half the length of the grain.

Grain oblong, obliquely obovate with a deep groove on the adaxial narrow surface, strongly laterally compressed, 3-angled ; angles obtuse ; embryo half as long as the grain.

The contrasting characters set out above show quite clearly that *Ischaenum spathiflorum* cannot be placed in the genus *Sehima*. In fact, the species cannot be fitted into any genus of the *Andropogoneae* subtribe *Ischaeminae* without a distortion of the limits of the existing natural genera. The only alternative, therefore, is to establish a new genus in this subtribe for the reception of this interesting species. It is proposed to call this genus *Triplopogon* (from the Greek words *τρίπλος* threefold, and *πώγων* beard, signifying that there are three tufts of hair on the glumes).

Triplopogon Bor

Triplopogon Bor, genus novum tribus *Andropogonearum* subtribus *Ischaeminearum*. Racemi multi pedunculis spatheatis, in apice ramulorum e nodis superioribus culmorum ramorumque flabelliformiter exeuntum ; articuli rhacheos fragilis recte disjungentes, applanati, marginibus dense ciliati ; pedicelli similes. *Spiculae* ad quemvis rhacheos nodum binae, dissimiles. *Spicula sessilis* : gluma inferior oblonga herbacea demum chartacea loco nervi medii sulco profundo in callum descendente notata, dorso dense pilis albis caducis oblecta, lateribus barbata, multi-nervis, superne marginibus carinata, carinis ciliata ; *gluma superior* navicularis, apiculata, superne carinata dorso inferne plana, dorso barbata, lateribus sparse pilosa, 9-nervis. *Anthoecium inferius* ♂ ; *lemma* hyalinum, ellipticum, apice obtusum, 3-nerve ; *palea* 2-nervis hyalina, *stamina* 3 ; *antherae* longae ; *ovarium* nullum ; *lodicae* 2, carnosae. *Anthoecium superius* ♀ ; *lemma* lineare, hyalinum, 3-nerve, ad medium partem fissum lobis acutis, aristam longam perfectam columnam castanea emittens ; *palea* ovato-truncata, hyalina, 2-nervis ; *styli* duo ; *stigmata* purpurea, plumosa ; *lodicae* 2, tenues, membranaceae, truncatae, interdum dentatae ; *stamina* nulla ; *caryopsis* a latere valde compressa, hilum versus caniculata. *Spicula pedicellata* ; *gluma inferior* explanata lanceolato-acuminata marginibus rotundata, multi-nervis, herbacea, biaristata, superne carinata, dorso sparse pilosa ; *gluma superior* elliptico-acuminata, 7-nervis, superne carinata, carina ciliata ; *anthoecia* nulla.

Gramina annua, Bombay, Indiam orientalem incolentia. *Culm*ⁱ erect, alti, glaberrimi multis e nodis inferioribus radicibus suffulti ; *foliorum laminae* longae, latissimae, molles, planae, basi petiolatae, oblongo-acuminatae, supra virides, infra glaucae ; *vaginae* inferiores scariosae a culmis demum solutae, superiores arcte complectentes ; *ligulae* membranaceae breves.



FIG. 1. *Triplopogon spathiflorus* (Hook. f.) Bor. A, Top portion of the plant $\times \frac{1}{2}$. B, Basal portion, showing stilt roots $\times \frac{1}{2}$.

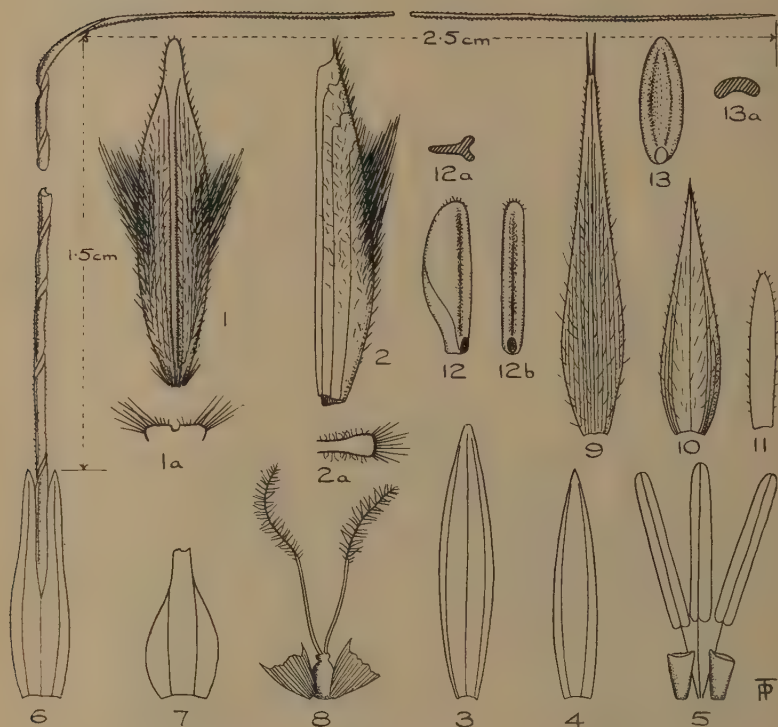
Triplopogon spathiflorus (Hook. f.) Bor comb nov.*Ischaemum spathiflorum* Hook. f., Flor. Brit. Ind. **7**, 138 (1896).*Sehima spathiflorum* (Hook. f.) Blatt. et McCann in Journ. Bomb. Nat. Hist. Soc. **32**, 23 (1927).

FIG. 2. *Triplopogon spathiflorus* (Hook. f.) Bor. Details of the spikelet structure. 1, lower glume of sessile spikelet; 1a, transverse section of 1; 2, upper glume; 2a, transverse section of 2; 3, lower lemma; 4, palea; 5, stamens and lodicules of lower floret; 6, upper lemma and awn; 7, palea; 8, gynoecium and lodicules; 9, lower glume of pedicelled spikelet; 10, upper glume; 11, lemma; 12, caryopsis; 12a, transverse section of 12; 12b, adaxial face of caryopsis showing groove and hilum; 13, caryopsis of *Sehima ischaemoides* Forsk.; 13a, transverse section of 13; all $\times 7$.

An annual, erect upon numerous stilt-roots. Culms up to 1.80 m. tall, erect, entirely supported on stilt-roots, or the main stem rarely rooting in the soil, terete, branched, smooth and glabrous, rather pale in colour, with well-marked nodes, glabrous on the nodes. Leaf-blades elliptic-oblong-acute, the lower up to 60 cm. long, 35 mm. wide, narrowed into a petiole at the base, colourless where it joins the sheath, flaccid, hairy on both surfaces with soft short hairs, glossy green above, glaucous-green below, scabrid on the margins, scaberulous on the surfaces, with a very conspicuous white midrib, pendulous; sheaths in the lower part of the culms very loose, scarious, falling from the culms, those above clasping the stem tightly, smooth and glabrous; ligule a scarious membrane, 1.5 mm. long.

Inflorescence a panicle of racemes terminating the main culm and its branches, being made up of numbers of racemes seated on spatheate peduncles terminating short slender branches which are arranged fan-wise at the upper nodes. Racemes pedunculate 4-5 cm. long without the awns, consisting of a fragile jointed axis upon which are seated pairs of spikelets, one sessile and ♂, one pedicelled neuter, at each node ; peduncles 7-8 cm. long, closely invested with a green sheath almost to the base of the raceme ; lamina of the sheath reduced to a scabrid arista ; joints of the axis linear or slightly widened upwards, flattened, covered with dense silky white hairs on the margins. Lowest pair of spikelets consisting of a rudimentary sessile and a pedicelled spikelet. Pedicelled spikelet similar to the other pedicelled spikelets in the racemes. The pair of spikelets next above are often reduced, the sessile often being much smaller than those above.

Sessile spikelet 8 (10) mm. long, 1.3 mm. wide, elliptic-oblong in shape ; *lower glume* shape and size of the spikelet, obtuse at the tip, with a deep groove on the dorsal surface, keeled on the margins in the upper third, rounded on the sides below, many-nerved, with the two nerves on each side of the groove uniting above and joining with marginal nerves, hairy on the dorsal surface and with two tufts of hairs on the sides just above the middle, ciliate on the keels above ; *upper glume* 8-10 mm. long, boat-shaped, compressed but only keeled in the upper quarter, flat on the dorsal surface below, hairy on the dorsal surface with a conspicuous tuft just above the middle, sparsely hairy on the sides, about 9-nerved, the nerves on the lateral flaps thin and anastomosing with the median nerve, apiculate, ciliate and scabrid on the keel. *Lower floret* ♂ ; *lemma* an elliptic hyaline scale 6 mm. long, 3-nerved ; *palea* a 2-nerved hyaline scale 5 mm. long ; *stamens* 3, often rudimentary in the lower spikelets ; *anthers* 3-3.5 mm. long ; *ovary* absent ; *lodicules* 2, fleshy. *Upper floret* ♀ ; *lemma* 5 mm. long, acutely 2-lobed at the top with the base of the stout awn issuing from between the lobes, 3-nerved ; *palea* an ovate-truncate hyaline 2-nerved scale ; *stamens* absent ; *ovary* with 2 styles and plumose stigmas ; *stigmas* purple, exerted laterally ; *lodicules* 2, not fleshy but thin, many-nerved, cuneate-truncate, toothed ; *awn* 4-4.5 cm. long with a twisted chestnut-brown column, 1.5 cm. long, ciliate on the margins of the spiral. Grain 3.5 mm. long, 1 mm. wide, with a deep groove on the adaxial side at the base of which is the hilum, strongly compressed, oblong-obliquely-obovate with a few hairs at the apex ; embryo half the length of the grain ; angles obtuse. *Pedicelled spikelet* seated on a pedicel 5 mm. long, very similar to the joint of the axis, lanceolate-acuminate in shape. *Lower glume* shape and size of the spikelet, rounded on the sides below, keeled above, many-nerved, often ending in two short aristae, sparsely and shortly hairy on the dorsal surface ; *upper glume* elliptic-acuminate, 7-nerved, keeled above the middle and ciliate on the keel.

IND. OR. : Bombay ; Salsette, on stony places in the hill forests, Jacquemont 797 (typus in Herb. Kew.) ; Khandala, 1897, Birdwood ; Khandala, Apr. 1917, Blatt. et McCann 5406 ; Khandala 1000 m., Nov. 1949, H. Santapau ; Khandala, 200 m., 21 Dec. 1952, H. Santapau 15357—in a ravine ; clumps 4'-7' tall, with many roots ; Mumbra,

Dec. 1952, *H. Santapau* 15288—erect gregarious grass, growing on the seashore on slopes that have been cleared of forest.

This grass has several peculiar features which are worthy of record. In the specimen grown in the tropical pits at Kew, the stem is entirely supported on stilt roots from the lower nodes and the main stem does not touch or enter the ground at all. In several of the specimens collected in Bombay, in which the base of the plant has been preserved, this also appears to be the habit of the plant. This habit must be at least rare among grasses, and the writer cannot recall any of the species of Indian grasses in which it occurs. In clumps of the grass the stilt roots are very numerous, in fact so numerous as to have been specially recorded by the collector.

As has already been stated, the lower floret in the sessile spikelet is male, while the upper is female. The stamens are thrust well outside the spikelet, and the purple stigmas are also conspicuous at anthesis. In the lower floret the two lodicules are very turgid and fleshy, while those in the upper floret are membranous and not at all turgid. In fact, it is the lodicules in the lower floret which do all the work when the glumes are forced apart to allow the stamens to escape. The stigmas take advantage of this situation with the result that the lodicules of the upper floret, though present, have no function to perform and instead of being fleshy remain membranous and thin.

Soilless culture.*—This method of culture has gained in popularity during recent years and we are given to understand that commercial growers as well as amateurs have found it possible by this means to raise good clean crops at reasonable cost. The author of this book has had considerable experience of this method and his book will therefore be welcomed by growers interested in the soilless culture of plants. Its numerous advantages are indicated and in the chapter on plant growth the parts played by the mineral elements in plant nutrition are described. The author then goes on to deal with the material and apparatus required, nutrient solutions and their application, the management of installations and the treatment advised for different crops. There are chapters on the culture of tomatoes, perpetual flowering carnations, and pot plants. The appendices give the quantities of salts required, with information on their solubility, units of volume and weight, followed by a useful index. The book is illustrated by line drawings and photographs showing soilless culture apparatus and some of the results obtained by this interesting method.

H. S. MARSHALL.

* *Soilless Culture*. By T. Saunby. London: W. H. & L. Collingridge Ltd. New York: Transatlantic Arts Inc. 1953. Pp. 104. Price 12/6d.

NEW VARIETIES OF *SILENE BURCHELLII*.

W. B. TURRILL.

Silene burchellii *Oth. ex DC. Prodr.* **1**, 374 (1824) var. ***macropetala*** *Turrill* var. nov. a var. *burchellii* foliis majoribus petalorum laminis magnis differt.

Herba perennis, radice crassa lignosa, caulibus plus minusve erectis usque at 12 dm. altis. *Folia* anguste elliptica vel oblonga, apice acuta vel breviter acuminata saepe leviter apiculata, basi angustata fere petiolata, 3–6.5 cm. longa, 0.5–2.1 cm. lata, utrinque haud dense pubescentia. *Inflorescentia* usque ad 23 cm. longa, 4–9-flora. *Calyx* 1.7 cm. longus, subdense breviter pubescens. *Internodus* (inter calycem et corollam) 1 cm. longus. *Petala* 1.5 cm. longa, laminis 8–9 mm. longis, lobis 3–4 mm. longis.

TANGANYIKA. Matengo-Hochland w s w. von Songea, Buschgehölze oberhalb Ugano c. 1600 m., 12.3.36 (fl.), 22.5.36 (fr.), *H. Zerny* 518 (Typus in Herb. Vind.).

Silene burchellii *Oth. ex DC.* var. ***gillettii*** *Turrill* var. nov. a var. *burchellii* foliis ovatis vel elliptico-ovatis basi haud vel vix angustatis praecipue distinguitur.

Herba perennis, caulibus diffusis prostratis vel ascendentibus dense breviter pubescentibus. *Folia* ovata vel elliptico-ovata, apice acuta saepe acutissime apiculata, basi rotundata, 1–2 cm. longa, 0.5–1.7 cm. lata, utrinque dense breviter pubescentia, sessilia. *Inflorescentia* 10–14 cm. longa, 2–3-flora. *Calyx* 2.2 cm. longus, dense breviter pubescens. *Internodus* (inter calycem et corollam) 1.5 cm. longus. *Petala* 1.4 cm. longa, laminae lobis 3 mm. longis.

SOUTH ETHIOPIA. Mega (4°5' N., 38°20' E.), hill north of Consulate, 2010 m., grassland where Juniperetum has been destroyed; on both lava and sandstone, 16.11.1952, *J. B. Gillett* 14281 (Typus in Herb. Kew.).

Corolla limb pale pinkish cream, tube greenish cream, calyx red veined.

Silene burchellii, as the species is at present most often accepted, is an extremely variable species with an exceptionally extensive geographical range from the extreme south of the Union of South Africa northwards through East Africa to Arabia. Especially variable characters are leaf size and shape and calyx length. It is reasonable to assume, after a prolonged investigation of a large number of herbarium specimens, that the variation is correlated both with gene differences and with different environmental factors. The character ranges are not greater than those found in *Silene maritima* or *S. vulgaris* (*S. cucubalus*) and, as in these species, specimens showing extreme contrasting differences might, on morphology alone, be considered as belonging to different species. Actually, after comparison of all available material it is not possible to divide the species, if such it be considered, into clear cut paramorphs. A few outstanding specimens may prove representative of local populations for which varietal names may be useful and two such are proposed above.

The particular interest of *Silene burchellii* var. *gillettii* is its morphological resemblance to the type variety, var. *burchellii*, from the coastal areas of the

Cape Province of the Union of South Africa. Thus varieties at or near the extreme north and south ends of the range resemble one another more than they do the variants intermediate in the geographical range. Morphologically linking var. *gillettii* to the variants common in Tropical East Africa are Schimper 317, from Abyssinia, Mettaro, 2800 m. (described by Pax under the name *Silene engleri* in Engl. Bot. Jahrb. **17**, 586 : 1893) and Gillett 15154, from Kenya, Northern Province, Marsabit, c. 1300 m., rocky lava slopes with *Croton* and *Dichrostachys*.

The Metabolism of Algae.*—This pocket volume in the Methuen series of Biological Monographs with its numerous graphs and chemical formulae has a rather forbidding appearance, at any rate to those of us whose chemical studies were abandoned more years ago than we care to recall. Yet while it is primarily of interest to the biochemist, much of the textual matter will interest botanists in general. It is particularly welcome since part of the information assembled in this small compass is from journals which are not available in botanical institutions. Six chapters between an Introduction and a Summary deal respectively with "The Phototrophic Assimilation of Carbon", The Chemotrophic Assimilation of Carbon", "Autotrophic Assimilation with special reference to Nitrogen Metabolism", "Heterotrophic Assimilation", "The Products of Metabolism" and "Growth and Metabolism". There is a good bibliography of some 300 references.

During the past two decades while the economists have been pre-occupied with the subject of world food shortages, botanists have considered the possibility of using our vast natural plankton resources or alternatively of starting large scale cultures. A recent publication from the Carnegie Institute of Washington on "Algal Culture from Laboratory to Pilot Plant", to which Dr. Fogg was a contributor, serves to focus our attention on the subject of algal metabolism. One reads that dried algal cells may contain 50% or more of digestible protein, and that as a rough estimate, less than one million acres would provide processed protein foods sufficient for the present world population. Personally speaking the word "processed" is too closely associated with the more unpleasant aspects of our every-day diet to allow of any great enthusiasm for this particular form of enterprise. Nevertheless there are other more innocuous applications such as the conversion of energy for purposes of heating and lighting, which may enter into the scheme of things to come.

Dr. Fogg's book is decidedly topical, for a catastrophic war has brought into prominence the investigation of raw material from marine vegetation, and this raw material is gradually finding its way into industry.

C. I. DICKINSON.

* The Metabolism of Algae. G. E. Fogg, Methuen & Co. Ltd., London : John Wiley & Sons, Inc. New York. pp. 149. Price 8/6.

MAPPING THE RANGES AND DISTRIBUTION OF TAXONOMIC GROUPS OF PLANTS.

An appeal to geographers.

W. B. TURRILL.

The systematic botanist or taxonomist is primarily concerned with studying the characteristics of plants so that he can group them into classes which he terms families, genera, species, and so on, on the basis of resemblances and differences. It may surprise even many biologists how great are the geographical needs of taxonomists, especially those who have to work on a wide scale as in the great herbaria at Kew, the Natural History Museum, and Edinburgh. To know where a specimen comes from is often a great help towards its quick and easy determination. Hence the need for good atlases and indexes of place names. Again, in monographic research the experienced taxonomist always sorts his material geographically at some, usually early, stage of his investigation. Frequently such sorting results in valuable indications regarding the best kind of grouping even though the groups have finally to be delimited by characters of the plants themselves. The modern taxonomist, however, is not restricted in his interests merely to making classes, giving them names, and arranging them in a hierarchical system. This is fundamental work but it leads beyond itself to the study of innumerable problems concerning the origin and historical development of the classes, of their how and wherefore. In another direction, taxonomists reach an interest in floras, in the composition, origin, and changes of all the plant life of a given area, large or small.

For all these purposes, and for others, methods of tabulation and of graphic presentation of the data concerned with range and distribution have been used. Botanists have often prepared maps, some of them weird and wonderful, to show the range, or the geographical boundaries within which the group occurs, or more detailed distribution within the range. Most of us frankly confess to a very superficial knowledge of the complexities of maps and map making and for that reason we appeal to the experts for information and advice. Naturally, the experts ask for details as to what we want to know and the purpose of this paper is to explain our problems and to ask questions as a guide to their solutions. The problems are diverse and one must expect that no one kind of map can meet all requirements. On the other hand, since so much of taxonomy is comparative, and for comparison to give reliable results it must be between things of the same kind, it is essential to keep the number of kinds of maps to be used as low as possible. It follows that the best kinds must be chosen and others discarded. In any one piece of investigation especially, the maps should be uniform in projection, scale, symbols used, etc., in so far as they have to be compared one with another, but it would also be a great advantage if they were uniform in such particulars for all published accounts which future workers may have to compare with one another.

PROJECTIONS. Presumably where the area mapped is a small one and the scale large, projection has no significance. Where the area is large, such as a whole continent, the projection used is obviously important.

In considering the range of widely distributed species, and still more of genera and families, large areas of many hundreds or thousands of square miles are generally involved. Any projection may suffice merely to show the range or distribution, but if the object is to obtain information that shall in some way interpret this, then it can be asked what projection will express the data most accurately. Is there a danger that one projection will over-emphasise some pre-conceived theory? To put the matter bluntly, is it possible to choose a projection favourable to some hypothesis one may wish to support? One suspects, for example, that the projections used to illustrate Wegener's theory of continental drift may have been selected to make the theory as plausible as possible. On the other hand, there is no doubt that some projections would not be suitable for certain purposes. Thus the "Kite" projection (as in Bartholomew's *Citizen's Atlas of the World*, ed. 9: 1947) would not be chosen to depict the floristic connections between America and Africa or Africa and India. The "Atlantis" projection is of no use to illustrate the relationships between the floras of S. America and Australasia. We are told in the text-books that, the earth being approximately a sphere, it is impossible to depict a considerable portion of the earth's surface as a flat map without some distortion of shapes, relative areas, or directions. If we use the convenient modern term *taxon* (plural, *taxa*) for any class unit in taxonomic biology (family, genus, species, etc.) the following suggestions for mapping of distributions may be made: (1) if the migration of *taxa* and of floras is being studied, directions are most important; (2) the same is true for the study of *clines*; (3) if populations within a *taxon* are being investigated areas are most important; (4) if *taxa* are being examined for their transoceanic distribution, shape and direction must be as accurate as possible. Matters become more complicated when comparisons have to be made between range or distribution and physiographic, meteorological, or geological factors. These are, however, considered later and it would seem that initially the botanist would ask which are the four best projections: A. for accuracy of direction; B. for accuracy of area; C. as a compromise of accuracy for shape and direction; D. as a compromise of accuracy for shape, areas, and direction.

It may be some guide to our advisers if the more important floristic connections, of transcontinental and transoceanic size, which are much to the fore in phytogeographical research be tabulated.

1. Arctic, circumpolar.
2. Himalayan, east and west.
3. Malaysian, north to south down the Malay Peninsula, then west to east to New Guinea.
4. African-Mascarene-Indian, west to east and north-east.
5. African, from Sahara to Cape Province,
6. Tropical African-Tropical South American, east to west across the Atlantic Ocean.
7. American, especially western American along the mountain chains from Alaska to Cape Horn.
8. South American-Australasian.

SCALES. The best scale must usually depend on requirements to be determined by the botanist or, in publication, by editorial control. It may, however, be asked whether there are technical advantages in using certain scales rather than others. For example, are some scales or series of scales more frequently used internationally than others? Is it best to keep to ratios of 1 to multiples or fractions of a million or to inch to miles or centimetre to kilometres?

Sometimes the botanist wishes to show on the same page the detailed distribution of a taxon (usually a species) in a restricted area and the general range of the same taxon throughout a much wider area. For example, he may wish to show both the detailed distribution of the snake's head (*Fritillaria meleagris*) or the common box (*Buxus sempervirens*) in the British Isles and the general range of the species in Europe. Are there any advantages in having a definite and constant ratio between the scales of such pairs of maps? For purposes of comparison of one pair with another pair it is obviously desirable that scales should be the same from one pair to another but it is not clear whether there are any geographical advantages in having the smaller map, say, 1/10th or 1/100th the scale of the larger.

BASIC MAPS. The taxonomist will collect his data regarding range and distribution from field studies, herbarium specimens, or literature, or from any combination of these. He then plots this information on to maps prepared beforehand. If the botanist is making a special study of a given flora or otherwise intensively investigating one area or a few areas he will probably require many, often hundreds, of copies of the same map and will have these printed. The experience of the geographer would be of use in deciding how much detail should be given in these "blank" maps. Are there any rules of guidance for the most useful number of parallels of latitude and meridians of longitude to be shown on any one map? How should the number vary with size and scale? What physical and political features should be shown to make plotting as easy as possible? Are coast-lines, main rivers, and political boundaries sufficient? Or should mountain ranges and peaks and principal towns be shown as well? Are there devices to show a maximum number of such features without over-loading the map and leaving insufficient room for the plotting of ranges and distributions?

SYMBOLS. Published maps of distribution and range show that botanists have followed their own sweet wills in devising and using symbols for indicating the geographical occurrence or range of taxa. Dots, circles, crosses, lines, hatching of various kinds, and so on have been used. Ranges, as depicted on maps, are often bounded by lines. If the ranges of several taxa are shown on one and the same map, "lines" distinguishable by colour or make up are often used. Sometimes the number of taxa whose ranges are shown on one map is so great that the result is confusing. The botanist would like to know if there be any standard for the use of lines (b) for the use of symbols. If not would it be possible for one to be worked out and made widely available? One has in mind a scheme of this kind: (a) for lines bounding ranges in maps, 1. continuous line, 2. regularly broken line, 3. alternate long and short joints, 4. alternating joints and crosses, 5. alternating joints and dots, 6. alternat-

ing joints and circles, and so on for twenty easily distinguishable boundaries without the use of colour ; (b) to mark position in distribution maps 1. dots, 2. circles, 3. crosses, 4. squares, 5. stars, 6. triangles, and so on for twenty easily distinguishable symbols. For both (a) lines and (b) symbols the simplest and most contrasting would come before the more complicated and less contrasting. In these days when costs of publishing are so high it is often essential to reproduce only in black and white and even then to have as few separate maps as possible within limits of accuracy and reasonable convenience in use.

FOUNT. The botanist sometimes finds it essential to have names, letters, or figures, printed on the maps of range or distribution he has prepared, when such maps are to be reproduced photographically the question of relevant lettering becomes similar to that of over-printing. Can guidance be given as to the best sizes, spacings, and kinds of letter to be used ?

CORRELATIONS. As already indicated many taxonomists try to correlate the constitution, range and distribution of their taxa with factors of the environment, present or past. These factors can be classified first as climatic, edaphic, or biotic. Every one of these classes is, however, more or less complex and also has historical aspects in that there have been many changes in the course of geological time. These factors all interact and presumably have always done so. By comparing carefully prepared maps of range and distribution with maps of the same area showing the distribution of climatic features, soils, and plant and animal communities the taxonomist, now turned plant geographer, can frequently obtain much insight into the causes controlling the range and distribution. It is often most convenient to look at the problem from a double standpoint, that of limiting factors and that of tolerance. In the former it is assumed that a plant can grow anywhere unless prevented from doing so by one or more adverse factors. To determine these factors there has to be careful analysis especially at range margins. In considering tolerance, the sum-total of factors present is accepted as the cause of distribution and of range. Apart from the physical and biotic factors of the environment, the time factor has to be remembered. A newly originated or newly introduced taxon may not yet have attained its full potential distribution or range. The value of re-mapping at intervals of 5, 10, 15, 20, and more years is evident in this connection.

In attempting to determine correlations of the range or distribution with environmental factors two groups of methods have been used. First, special formulae have been proposed, mainly for climatic factors, and the values obtained by their use over any one area compared with the range of this and that species or other taxon. Such formulae vary in complexity. Simple ones, such as the well known one by Martonne, are found to be reliable only within very restricted limits. They are easy to use, so far as calculation is concerned, but ignore so many factors that they often give misleading results in application. Complex formulae, such as that of Vazquez (1933) are of little more than theoretical interest, not so much because of the time taken in applying them as because they are useless unless very complete, often specialized, data are available, and they

rarely are. Secondly, distribution or range maps are compared with maps on which are shown climatic, edaphic, or biotic factors. One can, of course, place two maps side by side, and compare them by eye movements. Possibly some stereoscopic device exists by which an image of one map can be superimposed on another or the two images made to be viewed as one. The botanist would like to know if such apparatus be obtainable and if it be to have the chance of testing it for his purpose. It is, of course, possible to plot range or distribution directly on to, say, a rainfall or soil map. The objections to doing this are the cost of such maps when needed in large numbers and the over-loading which would result and make the map difficult or impossible to read. The most generally useful method appears to be to plot ranges or distribution on transparent tracing paper of good quality and to have a series of maps showing the environmental factors on which the transparencies can be superimposed. This is the method used in "An agricultural atlas of England and Wales" (Ordnance Survey, 1932). We should much like to have information as to the cost of production, and if desirable, publication, of such maps at the present day. Are there any geographical objections to their use and can advice be given as to the best ways of preparing them? For example, in the "Agricultural atlas" just cited one notes the outlines of the distribution maps are in red. Is this essential or desirable and if so, why?

It is perhaps not entirely out of place here to point out that botanists studying distribution of plants, whether as taxa or as plant communities, have to consider limiting factors and the summation of factors, tolerated by the individuals of the taxon or community, as they actually occur and not their values after these have been mathematically manipulated. For example, actual temperature, actual precipitation, and absolute or relative humidities must form the basis of correlation with distribution and range, not these reduced to sea level or otherwise made more convenient for correlation of a different kind. This applies to tabulations and graphs as much as to maps.

Mention should here be made of those physiographical features which are often excellently shown on maps. They are of very great importance in the study of range and distribution. Physiographical factors were not so named amongst the three groups, climatic, edaphic, and biotic, mentioned previously. This was because they act on a plant through climate, soil, or other organisms. In theory, they can be analyzed completely into the groups of factors given. Nevertheless, comparison of plotted range or distribution with physiographic maps is frequently revealing and sometimes essential. Altitudinal range, for example, has often to be taken into account by the botanist.

Are there better devices than contouring or hatching for depicting altitudes on maps in black and white? Is not the transparent map of range or distribution superimposed on a map of physiographical features likely to be the best way of obtaining correlations between range or distribution and such physiographical features as altitude, direction of mountain chains, and position of deserts, or, for marine plants, direction and extent of ocean currents?

Linked to questions connected with physiographical features is that of how approximately linear distributions can best be shown on maps.

River aquatic and river bank plants may have to be plotted in this way. Can the map experts suggest any means of showing their occurrences in a particularly clear manner ?

Density of population is generally more a matter for the ecologist than for the taxonomist but population problems are sometimes of taxonomic importance. Thus, on a small scale a crowded population may mean depauperated individuals, while, on a large scale a very scattered population may indicate the presence of factors or factor combinations adverse to individuals of the taxon. It would be of considerable interest if we could be informed of the best methods of indicating population density on maps.

Finally and perhaps not fairly included in the terms of reference of this paper, how can we obtain help for ourselves in actually plotting ranges and distributions on more or less blank maps? In systematic botany, the *Index Kewensis* is of the greatest use and importance. It is an index to the place of publication of all names of seed-bearing plants. Supplements are normally issued once every five years. Is there anything similar for place names in geography? If not, is there any index of gazetteers, especially of extra-British ones?

The geographers may tell us that we botanists are asking not merely a great deal but the impossible. On the other hand, they may put on a kindly smile and tell us in simple language that all we ask has long been available. Most probably there will have to be compromise in meeting our needs. The major difficulty appears to be that we want to make range and distribution maps we can compare with one another, accurately and easily, yet such maps must inevitably be of a certain number of different sizes and of different scales and sometimes probably of different projections. The major practical question is then, what are the best and the minimum number of kinds of maps to cover our requirements? If we can obtain expert guidance to answer this question it should be possible by agreement at international botanical congresses to obtain a considerable degree of uniformity in the future use of maps for showing the ranges and distributions of plants. This would be of great advantage not only to botanists but also to the many geographers and others who have at times to include plant range or distribution within the ambit of their studies.

The Modern Approach to Taxonomy.*—Science, in common with every manifestation of human ingenuity, reflects the spirit of The Age, and taxonomy, as a branch of science, is obliged to follow in the wake of Fashion. The neat artificialities of the Linnean Sexual System reflected the complacencies of eighteenth century rationalism, just as the sweeping hypotheses of the "Natural System" coupled with the dynamics of Darwinian evolution answered the call of nineteenth century exuberance. With the present age doubt and disillusionment have bred a carping

* *New Concepts in Flowering-plant Taxonomy*, Dr. J. Heslop-Harrison, London, 1953. William Heinemann Ltd., pp. viii + 135; price 6/- net.

spirit which requires minute examination of every assertion before it can be accepted, and taxonomists are perplexed—the “ orthodox ” look back wistfully at the traditional techniques and are reluctant to admit the need for change, whilst among the revolutionaries there is a growing suspicion that “ things are seldom what they seem ”, and that the Linnean *species*, as the fundamental unit of orthodox classification, may yet prove the *ignis fatuus* of taxonomic speculation.

Hitherto the exponents of the “ New Systematics ” have been hampered by the want of a clear, concise statement of their aims and objects, a fact interpreted by not a few of the traditional systematists as sure proof of mental vacillation and clouded understanding. Now this want has been made good in a book which must be regarded as the revolutionary’s manifesto, and which, one hopes, may become the week-end book, if not the breviary, of the orthodox.

To condense all that has been voiced and written on the subject of the New Systematics within the compass of one hundred and thirty-five small pages is in itself a remarkable accomplishment, and Dr. Heslop-Harrison has succeeded in doing so without sacrificing clarity or precision. Moreover, he writes with commendable impartiality and reserve, avoiding the pitfalls of controversy, and making no exaggerated claims for techniques which he frankly admits are, in many instances, scarcely freed from their swaddling-bands.

A brief history of the traditional theories of classification introduces the subject, followed by four chapters on different aspects of plant variability : —plasticity within the species, variability exhibited by plant populations, ecological differentiation, geographical variation and reproductive isolation. Then comes a more technical chapter on cytology and taxonomy, and finally two chapters of especial interest to the practising taxonomist, one on the experimental categories, and a concluding summary of the relationships of “ experimental ” and “ orthodox ” taxonomy. A useful (and much-needed) glossary ; some hints for further reading, and an index, complete the book. Misprints have been reduced to a minimum, though “ ecoline ” on p. 55 is an unfortunate oversight. I might also add that the explanation of an *histogram* (on p. 36) left me awed but unenlightened ; others whose mathematical ability extends beyond my modest and unreliable attainments may, however, experience no difficulty in following the argument. It is a pity that *Monotropa hypopithys* should have been chosen (on p. 87) to illustrate the results obtained by the application of the “ New Systematics ”, for the two critical units, *M. hypopithys* sens. str. and *M. hypophegea*, were in fact very clearly and carefully distinguished as *species* by Wallroth in 1822 (Sched. Crit. Pl. Hal., 190–196). Moreover, despite cytological evidence, many taxonomists still feel a little doubtful about the claims of *M. hypophegea* to specific rank ; as with so many critical units, there remains a shadow of mystery which the most recent techniques cannot quite dispel.

The matters referred to above are all, however, very minor points compared to the one major issue which will assert and re-assert itself in the mind of the orthodox taxonomist studying this book : Is the “ New Systematics ” or “ Experimental Taxonomy ” really taxonomy in the

proper sense at all? Dr. Heslop-Harrison represses this disturbing thought for one hundred and twenty pages, but, on the very last page of text, the burden of conscience proves too heavy:—"It is worth noting" he says, "that this new biological discipline is perhaps in a way not a form of 'taxonomy' at all". Guarded words, but none the less revealing, for the more one studies "Experimental Taxonomy" the more inevitable this conclusion becomes. Taxonomy is not only "the study of the principles and practice of classification" (p. 1), it is the practice of classification itself, and, as such, it has an essential component—nomenclature—divorced from which it is rendered useless; for how can one put the nameless into a nameless category and hope to be coherent? Nomenclature is, at one and the same time, the mainstay and the weakness of taxonomy, for while any system of classification which does not provide names for the units classified is scarcely conceivable, and certainly not practical, the belief that living organisms are not static, and that "special creation" is a myth, means that the taxonomists are constantly endeavouring to classify the ever-changing, and attaching names to entities which have no real existence. The taxonomist realizes the impossible by sacrificing truth, and systems of classification are acceptable only because, *in most instances and for most purposes*, they provide an approximation of the truth which, in practice, has been found adequate. To ask, nowadays, that any static system of classification should supply ultimate truths is to ask for too much, and it is difficult, if not impossible, to envisage any system of classification which is not static.

To classify and to name are the primary, and perhaps the sole aims of taxonomy, whereas with "Experimental Taxonomy" we are informed (p. 108) that "classification as such is not a primary aim", but that the "experimental taxonomist" seeks "to identify evolutionary units, and by experiment to determine their genetical inter-relationships and the role of environment in their formation".

I am not sure what "evolutionary units" are, but even if the words "evolutionary processes" could be substituted, it is clear that taxonomy and experimental taxonomy are distinct, though possibly complementary, disciplines. It is only by some sad confusion of thought that the two have been given the same name. "Experimental Taxonomy" is the study of those processes which give rise to the entities classified by the taxonomist, and is not, after all, so novel a subject as some might suppose. It is, in fact, none other than the science which in our early schooldays was known as "Nature study"—more advanced no doubt, but not essentially changed—and why, may I ask, should we exchange this apt and accurate title for the meaningless and misleading pomposities of "New Systematics" and "Experimental Taxonomy"? Nature study it is, and dropping pretension, those of us who look at the living plant, and try to find out how it lives and breeds, or why it varies, are, in our own modest and limited way, revolutionary taxonomists—perhaps not so revolutionary either, for surely nature study and taxonomy have always journeyed hand-in-hand, and no good taxonomist has ever closed his eyes to Life, even if circumstances have required him to temporize with a dried specimen and a collector's notes.

NOTES ON THE FLORA OF CYPRUS.

B. L. BURTT.

Delphinium caseyi B. L. Burtt, sp. nov. ex affinitate *D. fissi* Waldst. et Kit. (*D. hybridi* auctt. non L.) et *D. punicei* Pall. Illud foliis magis dissectis inflorescentiae axi villosa floribus majoribus pallidioribus, hoc bracteolis pedicelli basin versus insertis floris calcaris ascendente carpellis pubescentibus distinguitur.

Herba perennis, caule usque ad 85 cm. alto pubescente. *Folia radicalia* petiolo fere ad 20 cm. longo primo praecipue basin versus pubescente deinde glabro; lamina ambitu reniformis, circiter 5.5–7.5 cm. longa et 10–14 cm. lata, in segmenta primaria 3 fere ad basin secta, lateralibus iterum ultra medios trisectis, segmentis his et terminali iterum fere ad medium trisectis, segmentis ultimis lobatis lobis lineari-oblongis apiculatis; lamina supra et infra pubescens, nervis supra impressis subtus prominentibus. *Folia caulina* inferiora radicalibus similia sed minora, superiora simpliciora segmentis 3–5 linearibus fere integris. *Inflorescentiae* terminales et ex axillis superioribus axillares, racemo ad 30 cm. longo, axi densius crispulo-pubescente. *Bractae* lineares, infimae ad 1 cm. longae, ad apicem gradatim minores et superiores 3 mm. tantum longae. *Pedicelli* 5–7 mm. longi, dense et breviter crispulo-pubescentes, bracteolis duobus linearibus 1.5 mm. longis medio praediti, sub flore obconice incrassati. *Sepala* purpureo-caerulea, extra breviter et appresse pubescentia; posticum lamina elliptica fere 1 cm. longa et 4 mm. lata, calcar 1.2 cm. longo; postero-lateralia oblongo-elliptica, 1 cm. longa, 3.5 mm. lata, obtusa; antero-lateralia 8.5 mm. longa, alterum plus minusve elliptica 4 mm. lata, alterum (aestivatione interius) oblongum 2.5 mm. latum. *Petala* dorsalia duo calcarata, calcar 12 mm. longo, lamina apice biloba lobis paullo inaequalibus; lateralia 8.5 mm. longa, fere ad 2 mm. lata, biloba, extra ad apicem albo-pilosa, margine dorsali distanter ciliata, cetera glabra. *Stamina* c. 40, exteriora 5.75 mm. longa filamentis applanatis lineari-lanceolatis e basi sensim attenuatis, interiora filamentis 6.5 mm. longis parte basali ellipticis supra subito contractis in parte lineari, omnibus pilis rigidis parce praeditis; antherae late ellipticae, 1 mm. longae. *Carpella* 3, externe glabra, facie interiori pilis paucis parvis praedita, 3 mm. longa, apice in stylo glabro 2.5 mm. longo contracta.

CYPRUS. Northern range, rocky summit S.W. of Hilarion Castle, 665 m., 11 Feb. 1949, *Casey* 225; 30 Apr. 1950, *Casey* 1033; 18 June 1950, *Casey* 1054 (holotype); cult. Herb. Experimental Ground, Kew, fl. 29 July 1953, ref. K.3516.

Seeds of this delphinium were sent to Kew by Mr. E. C. Casey and were raised in the Herbarium Experimental ground. It flowered for the first time in July, 1953, in its third year, and I am indebted to Mr. R. A. Blakelock for observations on the living plants. The following notes by Mr. Blakelock amplify the description drawn up from the herbarium material:—*leaves* rather thick and fleshy for a Delphinium; *sepals* Plum Purple 934 to Aconite Violet 937 (R.H.S. Colour Chart); *petals* Plum Purple 934/3; *filaments* purple above, white below; *anthers* purplish on outside, yellow towards the connective; *pollen* white; *style* purple; *young fruit* tinged with purple.

The group of species to which *D. caseyi* belongs is centred round *D. fissum* Waldst. et Kit. (a species for long wrongly known as *D. hybridum* L.*). The position in the group as a whole is somewhat obscure and there would seem to have been an undue multiplication of species in Russian territory (cf. Nevski in Komarov, Fl. U.R.S.S. 7 : 99-183: 1937). *D. caseyi* seems sufficiently distinct to justify its recognition as a separate species : a view which does not, of course, exclude the possibility that a monographer (especially if affected by zoological custom) will prefer to regard both *D. caseyi* and several others as subspecies of *D. fissum*.

It is a pleasure to name this species in honour of Mr. Edwards C. Casey of Kyrenia. He not only collected herbarium material and seed of this plant (though he tells me it was first discovered by a Mr. Martin), but in many other instances he has gone to infinite trouble in studying the Cyprus flora and in answering our enquiries.

Ceratocapnos palaestina Boiss. Diagn. 1 ser., 8 : 12 (1849), et Fl. Or. 1 : 132 (1867) ; Le Maout & Decaisne, Traité Gen. Bot. 412 (1868), et Syst. Bot. (ed Hooker) 220 (1873) ; Post, Fl. Syria, Pal. Sinai, 55 (1896), ed. 2 (ed. Dinsmore) 1 : 43 (1932).

CYPRUS. On mountains S.S.W. of Kyrenia, in maquis on rocky north slope under bush of *Pistacia lentiscus*, 335 m., 1 May 1949, *E. C. Casey* 640. Among rocks below north cliffs of Trypa Vouno near Kyrenia, growing with *Vicia cyprica* and *Fumaria macrocarpa*, 480 m., 1 April 1951, *E. C. Casey* 1165.

Distribution. Lebanon, Palestine.

This is the first record of the genus *Ceratocapnos* from Cyprus and provides a most interesting extension of both generic and specific ranges. There are two species of *Ceratocapnos*, the other being *C. heterocarpa* Durieu which is found in central Spain (fide Maire in Jahandiez & Maire, Cat. Pl. Maroc. 2 : 259. 1932), Morocco and western Algeria. The extension of the known range of *C. palaestina* to Cyprus suggests that the distribution of the two species may one day be linked by the discovery of the genus in Cyrenaica.

Ceratocapnos was established as a distinct genus by Durieu (in Giorn. Bot. Ital. 1, pt. 1 : 336. 1844), but was united with *Corydalis* by Bentham & Hooker (Gen. Pl. 1 : 56. 1862). In habit and general facies both its species closely resemble *Corydalis claviculata* L., but they are distinguished by their remarkable dimorphic fruits. It is quite likely that further research on both genera would confirm the union of *Ceratocapnos* and *Corydalis*, but without opportunity for more elaborate investigation I am not at present disposed to follow this course as it involves the creation of new names. Furthermore the other possibility, that *Corydalis claviculata* and its allies are better separated from the main body of *Corydalis* and joined to an emended *Ceratocapnos* must be borne in mind.

Alyssum fulvescens Sibth. & Sm. Prodr. Fl. Graec. 2 : 13 (1813).

The localities given in the original publication of this species were "In Peloponneso et insula Cypro". These do not, however, appear on

* The true *D. hybridum* L., of which there is a specimen in the Linnean herbarium, is the same as *D. cuneatum* Stev.

the label in Sibthorp's herbarium at Oxford. Examination of the type specimen shows clearly that *A. fulvescens* has been correctly interpreted by those authors who have recorded it from the islands of the Aegean, an interpretation summarised in Rechinger's *Flora Aegaea* (p. 224).

Jackson & Turrill (in *Kew Bull.* 1938, 464) reported the rediscovery of *A. fulvescens* in Cyprus, citing *Kennedy* 512 from Platres at an altitude of 960 m. But this specimen is very different from the true *A. fulvescens*; it has, for instance, small pale flowers and a very short style whereas *A. fulvescens* has large yellow flowers and a style as long as the ovary. There is no sure indication that true *A. fulvescens* occurs in Cyprus; it seems probable that the locality was given in error and the species should be expunged from the Cyprus list.

The question arises, what is *Kennedy* 512? There is an added complication here for there are two sheets under this number: one was collected on 27 Feb. 1937 and has flowers and young fruits, and the plants have a rather loose indumentum and the calyx persisting for a time on the young fruit. The other sheet was collected on 20 March 1937, it has fruits only, but the plants have a close-fitting indumentum, the rays of the stellate hairs scarcely spreading at all from the surface that bears them, and the calyx appears to fall earlier. There may be two distinct species involved. In any case they are closely allied and their affinity is with *A. minutum* Schlecht., *A. smyrnaeum* C. A. Mey. and *A. desertorum* Stapf. This is a very critical group and it is not proposed to attempt a final determination until further material is available, or until opportunity occurs to study the non-Cyprian specimens in greater detail.

Factorovskya aschersoniana (*Urban*) Eig in *Zionist Org.*, *Inst. Agr. Nat. Hist. Bull.* 6 : 18 (1927); *Post, Fl. Syria, Pal. Sinai*, ed. 2 (ed. Dinsmore), 320 (1932).

Trigonella aschersoniana Urb. in *Sitz. Ber. Bot. Ver. Prov. Brandenburg*, 23 : 67 (1881); *Boiss. Fl. Or. Suppl.* 162 (1888); *Post, Fl. Syr. Pal. Sinai*, Add. 10 (1896)—sphalm. *T. aschersonii*; Eig in *Zionist Org. Inst. Agr. Nat. Hist. Bull.* 4 : 17 (1926).

CYPRUS. Kormakiti, distinct of Kyrenia, c. 120 m., in short turf (uncultivated), 18 Feb. 1950, *Casey* 971. Kyrenia, 60 m., short turf on thin soil over rock, 26 March 1950, *Casey* 995. Mile 5, Nicosia–Famagusta road, 150 m., frequent in waste lands in asphodel association, 30 March 1950, *E. Chapman* (MLRS 35). Mile 3, Nicosia–Famagusta road, 150 m., in wastelands in poterium–asphodel association covering fairly large patches, 12 April 1950, *E. Chapman* (MLRS 390). Mia Milia, 180 m., frequent in dry trampled grassland, 17 April 1950, *E. Chapman* (MLRS 480).

These appear to be the first fully documented records of the species from Cyprus. Muschler (*Man. Fl. Egypt*, 1 : 479. 1912) gives Cyprus in the distribution of the species, but it is not mentioned by Holmboe and, in the absence of a clear citation, Muschler's record was doubted by Eig (*Florae Palaestinae Exisccatae*, No. 332).

Factorovskya aschersoniana is an insignificant little annual species with a remarkable geocarpic habit. The fruit is pushed down into the earth

by the active growth of the stipe of the ovary. This may reach a length of 5 cm. The peduncle and pedicel also elongate somewhat, but it is the growth of the gynophore which is the plant's most remarkable feature.

Vicia eriocarpa (Hausskn.) Halacsy, Consp. Fl. Graec. 1 : 489 (1900).

CYPRUS. In campis prope Cerignia, 1 June 1880, *Sintenise & Rigo* 651. In montibus versus Pentedactylos, 24 May 1880, *Sintenise & Rigo* 645. In the river basin Horavostasi to Hefka, 15 m., 20 March 1935, *Syngrossides* 811. Attralassa-Yeri, 90 m., in fields and along the main road, 27 March 1936, *Syngrossides* 1176. Platres, 1050 m., roadside at edge of vineyard, flower purple, 2 May 1937, *Mrs. Kennedy* 577.

This species has already been recorded for Cyprus (K.H. Rechinger in *Arkiv for Botanik*, ser. 2, bd. 1 (9), 426 : 1950) but only from a single specimen. It therefore seems desirable to enumerate the material in the Kew herbarium, which shows that the species is not infrequent in the island. It has been found in Lesbos by Rechinger, but apparently is not known east of the Aegean except on Cyprus. The habitats where it has been found do not preclude its being an introduction, but the species is apparently no more common in Greece than in Cyprus.

Centaurea reuteriana Boiss. et Heldr.

This species was recorded for Cyprus by Druce (in *B.E.C. Rep.* 1930, 470 : 1931). No specimen has been found in Druce's herbarium and the species is a native of northern Asia Minor and unlikely to occur in Cyprus. It seems probable that the entry in Druce's list is simply a mistake for *Crepis reuteriana* !

Rumex bucephalophorus L. Sp. Pl. 336 (1753) ; Holmboe, *Stud. Veg. Cyprus*, 63 (1914) ; Rechinger *fil.* in *Bot. Not. Lund*, 1939, 485.

cf. subsp. ***gallicus*** (Steinh.) Rech. *fil.* in *Bot. Not. Lund*, 1939, 497.

CYPRUS. Larnaka, vere 1880, *Sintenise & Rigo* 1008.

subsp. ***aegaeus*** Rech. *fil.* in *Bot. Not. Lund*, 1939, 495.

CYPRUS. Ayios Epiktitos, 4 miles east of Kyrenia, rocky land near sea, 15 m., 11 March 1951, *Miss M. C. C. Casey* (E. C. Casey 1113).

The species in a broad sense has long been recorded from Cyprus, but is apparently uncommon and no Cyprian material was quoted by K. H. Rechinger in his critical account of the species. It therefore seems desirable to put on record that the two specimens from Cyprus in the Kew Herbarium belong to different subspecies. Miss Casey's specimens of subsp. *aegaeus* show very clearly the production of flowers at ground level which is so characteristic of this subspecies. Such flowers are entirely absent in the *Sintenise & Rigo* specimen which is more slender and less branched. The fruiting perianths of this are much smaller than in the Levantine subsp. *hipporegii* (Steinh.) Rech. f. or even in subsp. *graeus* which is already known from western Asia Minor and Crete. The fruiting perianth is, in fact, so weakly toothed that it only seems possible to refer this plant to subsp. *gallicus*, although it lies far to the east of the

recorded range of that subspecies. The specimen is a poor one, however, and the determination must be regarded as somewhat dubious until better material is examined.

Crocus veneris *Tappeiner* in Poech, Enum. Pl. Cypr. 10 (1842) ; Boiss. Fl. Or. 5 : 109 (1882) ; Maw, Monogr. Gen. *Crocus*, 243, tab. XLVIII (1886)—excl. pl. creticam.

CYPRUS. Polemi and Moni Monastery, 900 m. ; on open grassy sward facing north ; absolutely white with purple veining in throat, yellow patch below, pistil nearly as long as petals and very conspicuous ; 4 Nov. 1937, *Lady Loch* 11. Limassol district, Aphas, 900 m. ; limestone mountainside, among stones on a beaten pathway and among bushes of *Pistacia* with 1260 ; petals ivory white with dark purple veins, stigma and anthers orange-yellow, filaments yellow ; 12 Nov. 1938, *Mrs. Kennedy* 1259. Kyrenia district, Mt. Kornos, 450 m. ; steep mountainside facing north in grassy patches among *Poterium spinosum* ; flowers white with yellow throat, feathered purple outside, anthers yellow ; 3 Nov. 1940, *P. H. Davis* 2009. St. Hilarion, 1 mile west of the castle, 570 m. ; open places with *Colchicum hyemale* ; flowers white with some lavender feathering without ; 24 Nov. 1940, *P. H. Davis* 2035.

This species was at one time held to be the same as *C. cretensis* Körnicke (in Flora, 29 : 469. 1856), but there is no doubt that they are distinct and I have already published a note to that effect (in Reehinger fil., *Florae Aegaeae Supplementum*, in *Phyton* 1 : 223, 1949). *C. cretensis* is more closely allied to *C. laevigatus* than to *C. veneris*. It thus appears that the three Cyprian species of *Crocus*, *C. cyprius*, *C. hartmannianus* and *C. veneris*, are all endemic to the island.

Malayan Orchids.*—The appearance of a new regional “Flora” is always an event of some importance in the botanical world and consequently the present book is of especial interest. It forms the first volume of a projected new “Flora of Malaya”, designed to replace Ridley’s “Flora of the Malay Peninsula” which was published about thirty years ago. The present Flora breaks new ground by including, in addition to the indigenous plants of the area, all the more important plants cultivated in Malaya. Naturally, it is not intended to treat these as fully as the native plants but, from a perusal of the first volume, it appears that much useful information about the cultivated plants will be included.

The present volume deals with the *Orchidaceae*, a family which has for many years attracted the attention of the author, Prof. Holttum. A period of enforced leisure during the war, when Prof. Holttum was a prisoner in Singapore, provided the opportunity of putting together the results of his long study. The author is well qualified to write the present book since, in addition to a first-hand knowledge of the indigenous plants in the field, he has for some time been actively interested in the development of orchid hybrids suitable for cultivation in the Tropics.

* A Revised Flora of Malaya. Vol. 1. Orchids of Malaya, by R. E. Holttum. pp. V + 753, 4 coloured plates, 234 text figs. Government Printing Office, Singapore. 1953. Price \$20 Straits.

Such plants are badly needed since many of the more popular hybrid groups cultivated in temperate countries, such as *Odontoglossum*, *Odontioda* and *Cymbidium*, are not very successful in tropical countries except at considerable elevations.

The main part of the book follows the usual arrangement of a Flora, with keys for the identification of genera, sub-generic groups and species, together with clear and reasonably adequate descriptions of all these units. In Malaysian genera the native and cultivated species are keyed out together, a course which enables a broader view to be taken and for these genera to be dealt with more completely than would be possible otherwise. This is very useful in some of the genera, such as *Dendrobium* and *Bulbophyllum*, in which the sub-genera and sections established by J. J. Smith and Schlechter from their studies of Malaysian orchids in general, are keyed out and described in a clearer manner than anywhere previously. Throughout the book Prof. Holttum has taken full cognizance of the work of these specialists, in particular that of J. J. Smith which is fundamental to the understanding of Malaysian orchid classification. The treatment of the important group of monopodial orchids, in which field the author has himself made noteworthy contributions, is an up-to-date presentation of our knowledge of these rather difficult plants.

On the whole the information provided is accurate, though the author is not so much at home among the extra-Malaysian orchids as when dealing with those from Malaya. Prof. Holttum, like Homer, nods occasionally, as, for instance, when he queries the occurrence of *Liparis caespitosa* (Thou.) Lindl. in the Mascarene Islands, the region from which the species was originally described. Indeed it also occurs on the Tropical African mainland. It should also be noted that a conservative estimate places the number of African species of *Polystachya* at 150, in addition to others in America and Asia.

The descriptions are supplemented by over 230 line drawings, mostly by the author. These illustrate nearly all the genera, including a number of exotic ones, and show clearly many of the important diagnostic features. The longitudinal sections through the labellum and column are particularly useful, especially in the monopodial genera.

As already mentioned, the notes on the cultivated orchids of the region, both species and hybrids, and information on the cultivation of the various groups, form a distinctive feature of this Flora. There are introductory sections dealing with the general cultivation of orchids in Malaya, much of which information is applicable to other tropical countries, and also with the raising of orchids from seeds by modern methods. The latter section was written in collaboration with Mr. J. L. Pestana. The cultivation of each genus or group is dealt with more fully under the genera concerned and in some cases, e.g. *Spathoglottis*, *Dendrobium* and several genera of monopodial orchids, short descriptions of the more important hybrids are provided. Some of the more striking of these are illustrated in the four very attractive coloured plates.

Altogether Prof. Holttum is to be congratulated on the production of a noteworthy account of the orchids of an area rich in these plants. It is to be hoped that the subsequent volumes of the new Flora will maintain the standard set in this first volume.

V. S. SUMMERHAYES.

NOTES ON ASIATIC GRASSES : XVI.

Indochloa Bor, a new Genus of Indian Grasses.

N. L. BOR.

The two genera *Dichanthium* and *Heteropogon* are separated in most keys by the fact that the lower glume of the sessile hermaphrodite spikelet in the former is keeled from base to apex, while in the latter the lower glume is said to be rounded on the sides and if keeled, only towards the tips. There are sundry other differences which though small in themselves, contrive to give the two genera a very different appearance so that they can be picked out with ease. This last statement is only partly true as regards the Indian species which have been placed in these genera, since the treatment of the *Andropogoneae* in the Flora of British India has tended towards the collection of heterogeneous elements in genera and sections of genera, which leads one to believe that some sections at least were used as mere taxonomic pigeonholes into which difficult species could be dumped. In the Flora of British India, Sir Joseph Hooker, following Hackel, maintained the very large genus, *Andropogon*, and widened its characteristics to such an extent that he collected in it a large number of species in subgenera, all of which, including the two mentioned above, have been given generic rank by modern botanists. This is the natural outcome of more intensive work, and such work has brought to light other anomalies, one of which it is the intention of this paper to clear up.

***Dichanthium* Willemet**

Characteristics of the genus *Dichanthium* may be taken to be the following. All the lower glumes of sessile, pedicelled and neuter spikelets are many nerved and more or less herbaceous in texture; the spikelets overlap giving the solitary terminal raceme or racemes a distinctive facies; the lower glume of the hermaphrodite sessile spikelet is flat on the back, broadly obovate-truncate in shape with very narrowly inturned margins; the upper pedicelled spikelets are similar in shape, nervation and texture.

This genus was first described by Willemet in Usteri, *Neue Ann. der Bot.* **18**, 11 (1796) where he gave a good description of the genus. *D. annulatum* (Forssk.) Stapf may be taken as the type.

The following eleven species have been described as being indigenous in India, Burma and Ceylon.

1. *D. annulatum* (Forssk.) Stapf
2. *D. caricosum* (Linn.) A. Camus
3. *D. aristatum* (Poir.) C. E. Hubb.
4. *D. theinlwini* Bor
5. *D. pallidum* (Hook. f.) Stapf
6. *D. panchganiense* Blatt. et McCann
7. *D. armatum* (Hook. f.) Blatt. et McCann
8. *D. maccannii* Blatt.
9. *D. serrafalcoides* (Cooke et Stapf) Blatt. et McCann
10. *D. polyptychum* (Steud.) A. Camus
11. *D. clarkei* (Hack.) Haines

Of the species enumerated above, the first five form a well defined group of which the members resemble one another and conform to the characteristics of the genus. The next three species *D. panchganiense*, *D. armatum* and *D. maccannii* form a group in themselves—a group in which pits are present either in the lower glumes of the pedicelled or of the sessile spikelets or of both, the texture and nervation of the glumes are quite different from those in *Dichanthium*, and altogether in their appearance they deviate considerably from the true species of *Dichanthium*. As I have not yet been able to examine an authentic specimen of *D. panchganiense*, I am leaving the group of these species where it is for the present. Actually they seem to have more in common with the genus *Bothriochloa* than with *Dichanthium*.

D. serrafalcoides (Cooke et Stapf) Blatt. et McCann, has already been made the type of a new genus, *Pseudodichanthium* Bor, by the writer : it is very different in structure and appearance. *D. polyptychum* (Steud.) A. Camus must await judgment for the present. This grass, too, certainly is not a species of *Dichanthium*.

Turning over the species in the folder of the genus *Dichanthium*, one's attention is immediately arrested by *D. clarkei*, a species which was collected in 1883 on the isolated hill Parasnath in Bihar by C. B. Clarke. This species stands out from all the others. It is a straggling, weak annual, the inflorescence is a single terminal raceme, the glumes of the pedicelled spikelets are herbaceous and red in colour, those of the sessile spikelets are cream-coloured, the lower is elliptic-oblong in shape and both are covered with short white hairs. It is true that the lowest 2–3 pairs of spikelets are similar and neuter, but it is a very different looking plant from the members of the company in which it is at present placed. Hackel, who originally described the species as *Andropogon clarkei* Hack. in the *Oesterr. Bot. Zeitschr.* **41**, 49 (1891), that is, after he had made an intensive study of all the members of the *Andropogoneae* in *D.C.*, *Monogr. Phan.* **6** (1889), did not know where to place it. He merely recorded that it was "Species peculiaris, *A. delavayi* et *A. foveolato* remote affinis".

It is quite clear that *Dichanthium* is not the genus in which *Andropogon clarkei* can be placed.

Heteropogon Pers.

Heteropogon Pers., *Syn. Pl.* **2**, 533 (1807) is a characteristic looking genus and also a very common one in India. *Heteropogon contortus* (Linn.) P. Beauv. can be taken as the type.

So far the following species have been described in India.

1. *H. contortus* (Linn.) P. Beauv.
2. *H. melanocarpus* (Ell.) Benth.
3. *H. polystachyos* Roxb.
4. *H. triticeus* (R. Br.) Stapf
5. *H. bellariensis* (Hack.) C. E. C. Fischer
6. *H. ritchiei* (Hook. f.) Blatt. et McCann
7. *H. fischeri* Bor
8. *H. oliganthus* (Hochst. ex Steud.) Blatt. et McCann

The characteristics which distinguish *Heteropogon* from all other genera are (1) the dorsi-ventrality of the solitary raceme, in which the sessile hermaphrodite spikelets are embraced by the male or neuter pedicelled spikelets ; (2) the lower glume of the sessile spikelet which is usually terete and always rounded on the sides and firmly clasps the upper glume of which only the dorsal hump is seen ; and (3) the sharp callus of the mature spikelet containing the grain. The first characteristic, which gives a definite facies to the genus is quite unmistakeable.

Of the eight names mentioned above the first seven are quite uniform and all of them possess the three main characteristics already enumerated. It is when *H. oliganthus* is considered that discrepancies are found which make it quite impossible for that species to remain in *Heteropogon*.

The fact of the matter is it does not look like a *Heteropogon* and closer examination gives very good reasons why it should be taken out of the genus altogether.

The racemes are dorsi-ventral in a way, but it is not the same type of dorsi-ventrality that is found in *Heteropogon* in which the pedicelled spikelets curve round and protect the sessile hermaphrodite spikelet, giving the raceme a terete outline. In this species the pedicelled spikelets are spreading rather than overlapping. Moreover, the sessile hermaphrodite spikelet is not terete as in true *Heteropogon*, for the lower glume is in fact thinly chartaceous and flat on the back, rounded on the sides but not clasping the upper glume, as in *Heteropogon*. The basal callus is rounded not sharp as in *Heteropogon*.

It is obvious that the so-called *Heteropogon oliganthus* is not a *Heteropogon*. Indeed, Hackel, in *DC. Mon. Phan.* 6, 592 (1889), remarked that the species was intermediate between the subgenera *Dichanthium* and *Heteropogon*. Nevertheless, he placed it in the latter.

If *Dichanthium clarkei* be compared with *Heteropogon oliganthus*, it is surprising how many points of similarity are apparent in their structure.

They are (1) both straggling annuals ; (2) the structure of the racemes is the same ; (3) the lower pairs of neuter spikelets are remarkably similar both in shape and in nervation ; (4) the sessile hermaphrodite spikelets are very similar in shape, texture and nervation ; (5) the callus is obtuse and bearded.

There are far more similarities than dissimilarities between these two species, and there is no doubt in my mind that they are congeneric. One thing, at least, is quite certain, namely that they are absolute anomalies in the genera in which they have been placed, and no system of classification of the *Andropogoneae* could tolerate such obvious misfits in genera which without them are clear cut and homogeneous. It is, therefore, proposed to erect the new genus *Indochloa* for their reception.

Indochloa Bor

Racemi solitarii vel rarissime gemini culmorum ramorumque apicibus. Cujusve racemi spicularum paria 1-4 ima homogama ; paria infima simillia sed spiculae sessilis gluma inferior ea spiculae pedicellatae angustior, pauci-nervis ; spicularum paria superiora heterogama ;

spiculae ad quemvis rhacheos nodum binae, primaria pedicellata a pedicello demum soluta, vacua; secundaria sessilis demum cum rhacheos articulo accumbenti et spiculae pedicellatae pedicello disjungens semper hermaphroditae, anthoecio inferiore vacuo, superiore hermaphrodito a dorso leviter compressa, aristata. Spiculae sessilis gluma inferior chartacea, dorso plana, truncata vel, ut videtur, minutissime bidentata, marginibus infra apicem acute implicatis bicarinata, dorso plana vel rarissime subdepressa; gluma superior chartacea, navicularis, 3-nervis. *Anthoecium inferius*; lemma hyalinum, lanceolatum, vacuum; *palea* abest. *Anthoecium superius* hermaphroditum; lemma stipitifforme, chartaceum, e basi angusta in aristam perfectam abiens; *palea* minutissima vel abest; *stamina* 3; *ovarium* glabrum. *Caryopsis* obovata vel oblanceolata, compressa, ventri plana, dorso convexa, embryo dimidiam partem usque duas partes caryopseos aequante. *Spiculae pedicellatae* vacuae; *gluma inferior* multi- vel pauci-nervis, rubra vel viridis; *gluma superior* hyalina, membranacea, lanceolata; lemma hyalinum vel nullum.

Gramina annua, humiliora, Indiam orientalem incolentia; species adhuc duae. *Culmi* teretes, glabri vel pubescentes; *foliorum laminae* vaginaeque glabrae vel pilis basi papillosis obsitae. *Racemi* erecti vel nutantes, articulis planis, tenuibus, marginibus dense albociliatis.

The type of the genus may be taken as *I. clarkei* (Hack.) Bor.

Key to the species of *Indochloa*

- Culm glabrous below the inflorescence; pedicelled and neuter spikelets reddish brown *I. clarkei*
 Culm pilose below the inflorescences; pedicelled and neuter spikelets greenish *I. oligantha*

***Indochloa clarkei* (Hack.) Bor, comb. nov.**

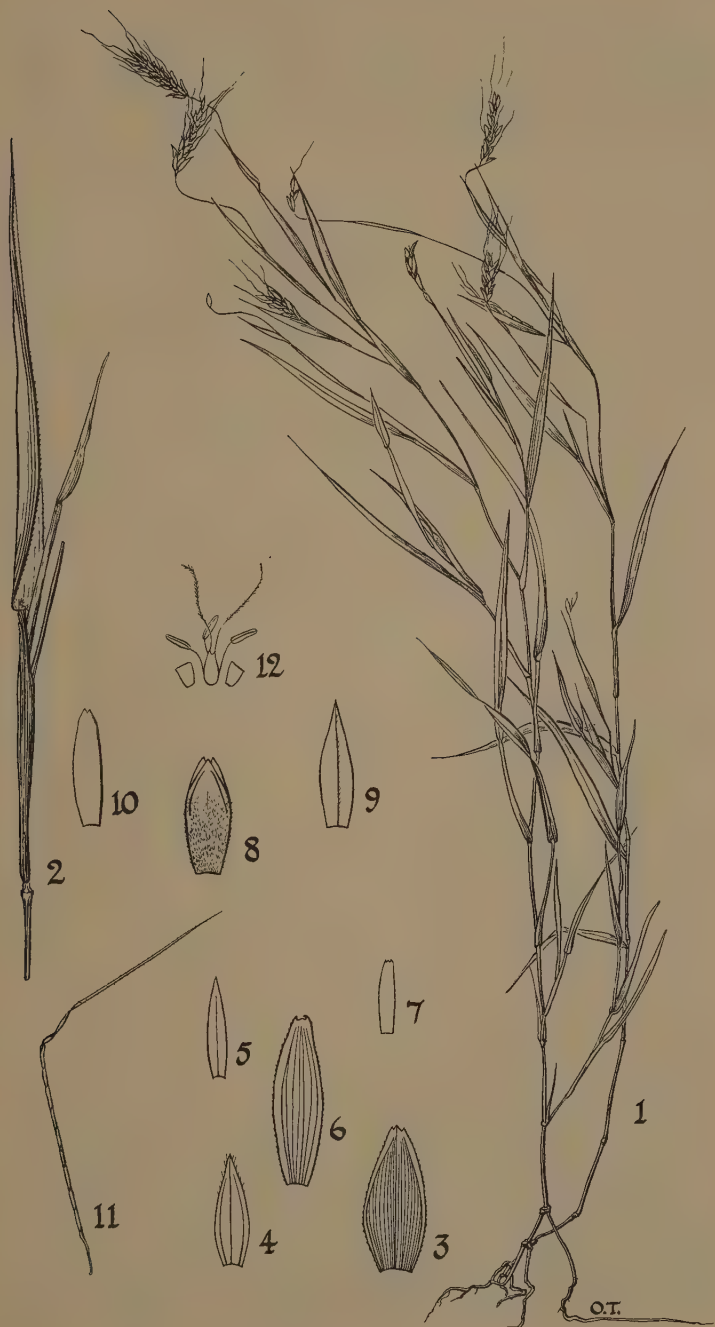
Andropogon clarkei Hack. in Oesterr. Bot. Zeitschr. **41**, 49 (1891).

Dichanthium clarkei (Hack.) Haines, Bot. Bihar & Orissa 1040 (1924).

A weak straggling annual, creeping below and rooting at the nodes. *Culms* up to 45 cm. tall, terete, slender, shining, very smooth and glabrous, except on the bearded nodes, striate, branched. *Leaf-blades* linear-lanceolate in shape, gradually tapering to an acuminate or setaceous point, flaccid, green, drying reddish, 5–7 cm. long, 3–5 mm. wide, finely nerved, the mid-nerve a little more prominent, very glabrous on the surfaces, finely scabrid on the margins, rounded to the sheath at the base, the mid-nerve being continued down on the sheath as a keel; sheaths rather lax, the lower slipping from the culms, the upper rather inflated and often containing an inflorescence in the axil, smooth and glabrous, markedly striate; ligule membranous, 1.5 mm. long, soon splitting up into rigid hairs.

Racemes solitary, 2.5–5 cm. long, seated on a long glabrous smooth peduncle issuing from the sheath of the uppermost node; rhachis of the

FIG. 1. *Indochloa clarkei* (Hack.) Bor. 1, Plant $\times \frac{1}{2}$; 2, portion of the stem with leaves $\times 4$; 3, lower glume of the pedicelled spikelet; 4, upper glume of do.; 5, upper glume of lowest neuter sessile spikelet; 6, lower glume of do.; 7, empty lemma of do.; 8, lower glume of hermaphrodite sessile spikelet; 9, upper glume of do.; 10, lower lemma; 11, stamens, ovary and lodicules; 12, upper lemma and awn. 3–12 all $\times 5$.



raceme above the two lowest articulations fragile ; internodes 2 mm. long, linear, slightly widened at the apex, compressed, covered on the margins and one surface with dense white hairs, with a translucent middle line, glabrous on the side next the sessile spikelet. Lowest two pairs of spikelets neuter, homomorphous, each pair consisting of a sessile and a pedicelled spikelet. *Sessile homomorphous* spikelet ; lower glume 4.5–6 mm. long, 1.5 mm. wide, reddish-brown in colour, elliptic-acute, flat on the back, 8–11-nerved, narrowly inturned on the margins, 2-keeled, scabrid on the keels below, narrowly winged on the keels above ; *upper glume* 4 mm. long, hyaline, lanceolate-acute, 3-nerved, with inflexed flaps ; florets reduced to an empty hyaline scale. *Pedicelled homomorphous* spikelet ; pedicel 1.25–1.5 mm. long, with a translucent middle line ; *lower glume* rounded on the back, elliptic in shape, acute or emarginate, 5 mm. long, 2.5 mm. broad, narrowly inflexed on the margins, narrowly winged and scabrid on the keels, 9-nerved, smooth and glabrous, brown or reddish in colour ; *upper glume* 4 mm. long, hyaline, 3-nerved, lanceolate ; florets absent. Lowest two internodes linear with a translucent middle line, 1 mm. long, smooth and glabrous, tough, not disarticulating, except below the lowest hermaphrodite floret. Remaining sessile and pedicelled spikelets heteromorphic ; joints compressed, covered with dense white hairs and with a translucent channel, pedicels likewise with a translucent middle line, covered on one surface with dense white hairs, glabrous on the other, the pedicelled spikelet falling entire, the sessile with the pedicel and with the contiguous joint of the rhachis ; internodes of the rhachis 2 mm. long, pedicels 2.5 mm. long. *Sessile* spikelet hermaphrodite ; *lower glume* 3.5–4 mm. long, flat or slightly depressed on the back, elliptic-acute or truncate, narrowly inflexed on the margins, winged on the keels, shortly bearded on the callus, covered all over or only in the lower half with glistening white hairs, 5-nerved ; *upper glume* 3.5–4 mm. long, ovate-acute when flattened, boat-shaped, keeled on the back and on the sides, 3-nerved, smooth and glabrous, hyaline, ciliate on the inflexed margins and on the keel. *Lower floret* empty ; *lemma* hyaline scale 3.5 mm. long, ciliate on the margins ; *palea* absent. *Upper floret* hermaphrodite ; lemma the hyaline base of a geniculate awn 2.5 cm. long ; the lower twisted brown column 1.4 cm. long, the distal bristle 1.2 cm. long, antrorsely scabrid ; *anthers* 3, 1 mm. long ; *lodicules* 2. Pedicelled spikelets similar to the lowest two neuter pedicelled spikelets ; *lower glume* broadly elliptic-acute, many-nerved, 5 mm. long. *Upper glume* 4 mm. long, 3-nerved ; lemma 4 mm. long, nerveless, ciliate at the tip.

INDIA : Bihar, Parasnath, 1400 m., 7 Oct. 1883, C. B. Clarke, 33780. Mount Abu, 14 Oct. 1916, Blatter 2597 et 25 Oct. 1916, Blatter, 2651.

Hackel did not quite know what to do with this species. In his description he placed it in the subgenus *Hypogynium* sect. *Eremopogon* of his large unwieldy and composite genus *Andropogon*. In his work on the *Andropogoneae* Hackel included in this section of the subgenus *Hypogynium* two species which now belong to the genus *Eremopogon* and another species which has been placed in *Schizachyrium*. It would be difficult on many counts to place *Indochloa clarkei* in the subgenus *Hypogynium* as defined by Hackel himself, but the dissimilarity of the sessile and pedicelled spikelets in *Indochloa* is decisive, since these are very similar to one

another in *Hypogynium*. Hackel ends his description by surmising that the species is distantly related to *Eremopogon fovelatus* and *Schizachyrium delavayi*. Actually the only way in which these species can be said to be related to one another is that they all belong to the tribe *Andropogoneae*. If one might hazard a suggestion, it is that this species is more nearly related to *Heteropogon*.

***Indochloa oligantha* (Hochst.) Bor, comb. nov.**

Andropogon oliganthus Hochst. ex Steud. Syn. Pl. Glum. 368 (1854).

Heteropogon oliganthus (Hochst.) Blatt. et McCann in Journ. Bomb. Nat. Hist. Soc. 32, 368 (1928).

A weak annual grass. Culms up to 30 cm. tall, usually much shorter, erect or sometimes creeping below and then rooting at the lower nodes, very slender, terete, villous in young plants, but villous below the panicle and below the nodes only in older plants, which are otherwise smooth and glabrous, striate, shining. Leaf-blades linear-acuminate in shape, rounded at the base, 5-7.5 mm. long, with remarkably thickened cartilaginous margins which are exceedingly scabrid, with a very marked cartilaginous white midrib, softly hairy on both surfaces with long soft, white or colourless, tubercled-based hairs ; basal *sheaths* markedly striate with the mid-nerve of the leaf carried down as a keel, smooth, glabrous and shining, or with bulbous-based bristles in the furrows ; culm-sheaths very tight, closely clasping the stems and carrying a rudimentary blade ; *ligule* membranous, 1.5 mm. long, rounded above.

Inflorescence consisting of a solitary or very rarely two racemes, seated on a hairy peduncle which is long-exserted from the uppermost leaf-sheath and which is somewhat expanded at the apex ; racemes up to 3.5 cm. long, somewhat curved, consisting of a tardily disarticulating jointed rhachis bearing a sessile and a pedicelled spikelet at each articulation and supported below by three pairs of spikelets, all neuter ; joints 2 mm. long, flattened, ciliate on the margins with dense white hairs ; pedicel 2.25 cm. long, linear, flattened, densely ciliate on the margins. Lowest two to three pairs of spikelets neuter, the pedicelled similar to the pedicelled spikelets accompanying the fertile sessile spikelets and the sessile neuter spikelets different from both. Lowest neuter spikelet two to three pairs ; spikelets greenish, sometimes tinged with red or purple. *Lowest sessile neuter spikelet* ; *lower glume* narrowly elliptic-truncate, emarginate or simply acute at the tip, 3.5-5 mm. long, 6-7-nerved, glabrous or with a few hairs at the tip and base ; *upper glume* 3-4 mm. long, elliptic-, oblanceolate- or oblong-acute, ciliate on the inturned margins ; the lower glumes of the other sessile neuter spikelets are 7-9-nerved. *Pedicelled spikelets* accompanying neuter sessile and hermaphrodite sessile spikelets similar and neuter ; *lower glume* 4-5.5 mm. long, elliptic-truncate or somewhat oblique and folded, up to 2.5 mm. wide when flattened, 9-11-nerved in the central portion, many- and closely-nerved on the marginal portions, scabrid on the keels ; *upper glume* half to three-quarters the length of the lower, oblong to oblanceolate, acute, 3-nerved, ciliate on the inturned margins. *Sessile hermaphrodite spikelet* 4-5 mm. long, including the shortly bearded obtuse callus ; *lower glume* 3.5 mm. long, rounded or flat on the back, oblong-



FIG. 2. *Indochloa oligantha* (Hochst.) Bor. 1, plant $\times \frac{1}{2}$; 2, portion of stem with leaves $\times 4$; 3, lower glume of the pedicelled spikelet; 4, upper glume of do.; 5, lower glume of the lowest neuter sessile spikelet; 6, upper glume of do.; 7 & 7a, lower glume of sessile hermaphrodite spikelet; 8, upper glume of do.; 9, lower lemma; 10, upper lemma and awn; 11, stamens, ovary and lodicules. 3-11 all $\times 5$.

truncate in shape, not keeled except towards the tips, but with slightly inturned margins, ciliate and scabrid on the margins above, covered on the sides with short white caducous hairs, 6-nerved ; *upper glume* chartaceous, slightly longer than the lower glume, boat-shaped, smooth and glabrous, shining, keeled towards the tip and scabrid on the keel. *Lower floret* empty ; *lemma* a hyaline scale 2.5–3 mm. long ; *palea* absent. *Upper floret* ♀ ; *lemma* 1.5 mm. long, the cartilaginous base of the awn ; *palea* a very small oblong or obtuse hyaline scale ; *stamens* 3 ; *anthers* 1 mm. long ; *styles* 2 ; *stigmas* 2, plumose ; *awn* 3.4 cm. long, of which the lower half is a twisted chestnut-brown column, minutely ciliate along the spirals ; bristle antrorsely scabrid. *Grain* oblanceolate, 2 mm. long ; *embryo* half as long ; *hilum* punctiform, basal. *Pedicelled spikelet* ; lower and upper glumes very similar to those of the lower neuter spikelets but the lower glume is garnished with a few long hairs on the back.

IND. OR. : Madras State, Nilgiris, near Kaity, *Hohenacker* 1288 (cotypus in Herb. Kew.) ; Herb. Wight. 3106 ; Avalanche, 2,500 m., Nov. 1883, *J. S. Gamble* 13356 ; Nilgiris, 1500 m., Oct. 1886, *J. S. Gamble* 18307 ; Pykara, 1800 m., Oct. 1886, *J. S. Gamble* 18308 ; Mysore plateau, Kaduremookh, 2000 m., Dec. 1899, *Barnes* (?) ; Coimbatore, Iyerpadi, 12 Nov. 1901, *Barnes* (?) ; Kulhutti Babood, 1700 m., Oct. 1908, *A. Meebold* 10763 ; Kavalay, Nov. 1910, *A. Meebold* 12205 ; Ainamudi downs, Dec. 1933, *Mayuranathan* ; ibidem, 2000 m., Dec. 1933, *Barnes* 663.

BOMBAY : Panchgani tableland, Oct. 1923, *C. McCann* ; ibidem, Oct. 1925, *C. McCann*—very strongly aromatic when fresh ; common on the tableland.

Hackel says with regard to this species “ Species inter *Heteropogones* et *Dichanthia* ambigens, propter spiculas sessiles a pedicellatis forma, nervatione, sulco dorsali, etc., diversas *Heteropogonibus* propior ”. The species is certainly related to *Heteropogon* but it has nothing in common with *Dichanthium*.

It must be pointed out that there is no dorsal groove in the lower glume of the sessile spikelet of this species, similar to that of some species of *Heteropogon* as Hackel alleges. The dorsal surface is flat but it is usually slightly rounded or very rarely shallowly depressed.

This grass is extremely variable in the amount of indumentum on the spikelets and vegetative parts. Some of the Madras specimens, e.g., Meebold 12205, Barnes 663, and Mayuranathan's specimen are so slender that they have the facies of a distinct species. I am, however, unable to find any reliable character upon which to separate them as a new species.

Indian Trees and Shrubs.*—The ideal way of determining plants is to be able to name them correctly at first sight, but, in so far as this is possible, this demands a great deal of acquired knowledge, which is only satisfactorily gained after working over a long period with the plants themselves. Learning by heart in the classroom the characters of a list of selected families is a tedious affair and discouraging to the student. In working with plants the important requirements are to have an interest in them and to understand how to examine them and how to use books and keys for determining them. The faculty of immediately recognising families and genera is one which develops more and more with experience. With these points in mind, Dr. N. L. Bor, who has had long and very wide experience in Indian forestry, has written this admirable book on trees and shrubs of India, Pakistan, and Burma based on courses he has given at the Indian Forest College, Dehra Dun. The book is designed for the student who has covered an elementary course in botany and it provides him with a means of determining trees and shrubs, particularly in the field. Above all, the author has presented his material in a manner designed to interest students in the plants they are dealing with.

Following an account of the Gymnosperms, there is a concise chapter on the history of the classification of plants. This contains an outline of some of the evidence supporting the principles of Dr. Hutchinson's classification, which is the one followed for the Angiosperms in this book. A particularly valuable feature is the reproduction of Dr. Hutchinson's "Key to the Families of Dicotyledons" (from his *Families of Flowering Plants*) adapted for the families occurring in the Indian continent.

Treatment of the Angiosperms occupies the major part of the text. The orders are provided with short diagnostic descriptions, and the families with full, detailed descriptions. There are excellent keys to genera and also often to species; vegetative characters are frequently used. The genera are not provided with detailed descriptions but important notes on habit, bark, wood, foliage, etc., are given together with information on habitat, distribution, uses and any other noteworthy and interesting details. The important species are provided with similar informative notes which frequently capture the reader's attention e.g., we are informed that the corollas of *Madhuca latifolia* (Roxb.) Macbr. "have an irresistible attraction for bears". There is also a chapter entitled "Getting to know the trees" which directs attention to the characters—particularly field characters—which are valuable in determining trees. Types of bark, blaze, sap, latex, fruits and seeds, etc., are described and many named examples are given. At the end of the book there are good illustrations including clear dissections covering the more important families. Often more than one genus is illustrated for a family.

This book, which is simply and clearly written, should find great practical use amongst students, teachers, and others concerned with Indian forestry.

L. L. FORMAN.

* Manual of Indian Forest Botany, Dr. N. L. Bor. Geoffrey Cumberlege, Oxford University Press, Bombay. Pp. xv + 423, Pls. 31. Price 25 Rs. (42s.).

A NEW ACER FROM CHINA.

P. C. TSOONG.

During one of our botanical excursions in the Tsingling Range of Shensi province, we came across an unfamiliar species of maple with a number of magnificent specimens in Miaotaitze, an important stopping-over point for buses running between Paochi and Hanchung. The trees were found near the historic temple, Liuhou Miao, belonging to Liupa District and were in fruit at the time. The composition of the inflorescence, coupled with the shape of leaves and samaras reveals unmistakably its affinity with the species of Sect. *Platanoidea*. Subsequent comparison shows that its affinity is with the Japanese *A. Miyabei* Maxim. in the more than horizontally spreading samaras with densely pubescent nutlets, but is sufficiently different in the lobes of leaves being obtuse and nearly entire instead of acuminate and coarsely toothed. During the recent visit of Dr. W. P. Fang, the specialist of the family, I had his assurance that it definitely represents a species new to science.

It is most interesting that in northwestern China a species with Japanese affinity should be found. It is a big tree with rounded crown and a stem attaining a girth of over ten feet. It will be a very good horticultural subject if introduced into cultivation.

***Acer miaotense*, P. C. Tsoong, nov. (Sect. *Platanoidea*).**

Folia ambitu iis *P. Miyabei* Maxim. proxima sed lobis obtusis. Species samara valvis reflexis loculis pubescentibus in grege *Platanoidea* bene isolata.

Arbor magna; rami cortice griseo tecti, lenticellati, glabri. Folia opposita, petiolis gracilibus basi incrassatis nigrescentibus levissime puberulis ceterum glabris circ. 35 mm. longis; lamina late ovata, circ. 85 mm. longa ac lata, basi cordata, palmatim 3-5-lobata, lobis ovatis, margine remote grosse repando-sinuata, lobo medio sub-caudatim acuminato reliquis obtusis, utrinque reticulata, supra glabra intense viridia, subtus in axillis nervorum barbata secusque venas pubescentia. Flores ignoti; pedicellis fructiferis gracilibus 20 mm. longis. Samarae circ. 10 in cymas terminales dispositae, valvis plus quam angulo 180° patentibus plus minusve reflexis, 26 mm. longis, 8 mm. latis prominente venosis, loculis ovatis 8 mm. longis ac latis dense pubescentibus.

Shensi: Liupa Hsien, Miaotaitze (T. N. Liou 11997), Aug. 20, 1940: (typus in Herb. Kew.).

The Herbaria of the World.*—The first edition of this work appeared in 1952 and the fact that already a new edition has been called for is its best testimonial. The new edition includes a great deal of new matter and many corrections, but a slightly different double-column format has kept the size down to only eleven more pages. As a sub-title says,

* *Regnum Vegetabile*, vol. 2. *Index Herbariorum*, Part I, *The Herbaria of the World*, ed. 2, by J. Lamjouw and F. A. Stafleu. Published with financial support of I.U.B.S. by the International Bureau for Plant Taxonomy and Nomenclature of the International Association for Plant Taxonomy. Utrecht 1954. pp. 179. D.fl.13.30.

it is "A guide to the location and contents of the world's public herbaria".

The list of herbaria, which must be the most complete one in existence, occupies 118 pages and they are arranged alphabetically under the name of the town or city in or near which they are located. A list of staff is given together with the chief contents of the herbarium. These details are, naturally, more exhaustive in the case of the smaller newer herbaria, for it would be a major task in itself to list the collections in such herbaria as that of Kew or the British Museum. Brief notes are given of the activities of the herbaria.

There follows (pp. 131-144) a list of herbarium abbreviations suggested for use in taxonomic publications. Dr. Lanjouw is to be congratulated on producing this list and it is to be hoped that it will be adopted universally. Pages 145-160 is a list of the herbaria arranged by states and the remaining pages are occupied by an exhaustive general index.

It would be easy to level many criticisms at this work and the editors will be the first to admit its imperfections: some of the difficulties encountered in making the book are given in the introduction. But there are few printers' and proof-reading errors and the work will remain for many years a standard reference for addresses and many other details of herbaria which are constantly required by working taxonomists.

A. A. BULLOCK.

FLORA OF TROPICAL EAST AFRICA.

The Flora of Tropical East Africa is now in course of publication by the Crown Agents for the Colonies. Preparation is centred at the Herbarium, Royal Botanic Gardens, Kew, under the editorship of Dr. W. B. Turrill and Mr. E. Milne-Redhead. Accounts of families are being published as soon as authors supply the typescript and not in any systematic order. This system has the double advantage of avoiding delay in publication of accounts by specialists and of allowing subscribers to arrange the Flora according to any one of the various systems in use amongst taxonomists.

Parts of the Flora can be obtained directly from The Crown Agents for the Colonies, 4 Millbank, Westminster, London S.W.1, or through any bookseller. The following parts have been published:

<i>Ranunculaceae</i>	3/-
<i>Oleaceae</i>	2/9
<i>Marantaceae</i>	1/3
<i>Onagraceae</i>	2/-
<i>Trapaceae</i>	8d.
<i>Pedaliaceae</i>	1/10
<i>Hypericaceae</i>	1/8
<i>Turneraceae</i>	1/8

Accounts of other families are in the press or in various stages of preparation for publication.

A SURVEY OF THE FLORA OF CHIOS.

R. D. MEIKLE.

INTRODUCTION

The Aegean island of Chios (lat. 38°–39° N., long. 26° E.) lies off the coast of Turkey close to the Erythraean promontory about 55 miles west of Izmir (Smyrna), with the island of Lesbos (Mytilene) to the north and the islands Samos and Ikaria to the south.

Chios is roughly rectangular in shape, thirty one miles long from north to south and about eighteen miles across from east to west at its widest part. The eastern coast is broken by many small bays, the western coast is excavated by a large bay running almost the whole length of the island.

Chios may be divided into three more or less natural physical divisions :

1. The mountainous northern and western region, including the Pelinaíon range, with summits reaching 4,255 ft. in altitude. Within this region fall Spartoúnta, Kardhámyla, Mármaro, Amádhēs, Pytiós, Viki, Kouroúnia and Stous Hephtá.
2. The Kámpos, a much-cultivated belt in the east centre, comprising the lowlands surrounding and lying south of the town of Chios. The villages of the Kámpos are collectively referred to as "the Kampóchora."
3. The hilly south-eastern region, famed for the production of gum mastic (from *Pistacia lentiscus* L.). The villages in this region are for this reason known as "the Mastichóchora."

The island possesses no permanent rivercourses of any size, and very little marshy ground. Forests were extensive formerly, but have since been cut down or otherwise destroyed, so that apart from scattered groups of pines and evergreens, no woodland proper can now be said to exist.

GEOLOGY.

The greater part of Chios is composed of coarse grey, chalky limestone, forming, particularly in the northern region, bold ridges, rugged summits and craggy cliffs. In the north-west bulge of the island limestones are replaced by Palaeozoic schists and greywacke, and the hills here are rounded, with more gentle slopes and wider valleys. A small area of alluvium lying west and south of the town of Chios forms the fertile Kámpos. Tertiary sandstones and clays occupy the gum mastic region of the south east, a country of low rounded hills, very different from the rugged highlands of the north centre.

HISTORY OF THE FLORA.

Many travellers to Chios have recorded some aspect of the vegetation, and references to vines, figs, gum mastic and other cultivated plants can be traced back to classical literature. The first strictly botanical observations on the Chian flora must, however, be accredited to **J. Pitton de Tournefort** (1656–1708) who, in company with the celebrated botanical artist **Claude Aubriet**, visited the island in March 1701 during his tour of the Levant. Tournefort lists twelve new species from Chios in his *Corollarium Institutionem Rei Herbariae* (1703); some of these (e.g. *Aristolochia*

hirta L., *Erodium chium* (L.) L'Hérit., *Malcolmia chia* (L.) DC.) were recognized and accepted by Linnaeus and later authors, others became varieties of existing species, or were reduced to synonymy. An excellent illustration by Aubriet of "*Aristolochia subhirsuta chia longa folio oblongo, flore maximo*" (now *A. hirta* L.) appears in Tournefort's posthumously published *Relation d'un Voyage du Levant* (1717).

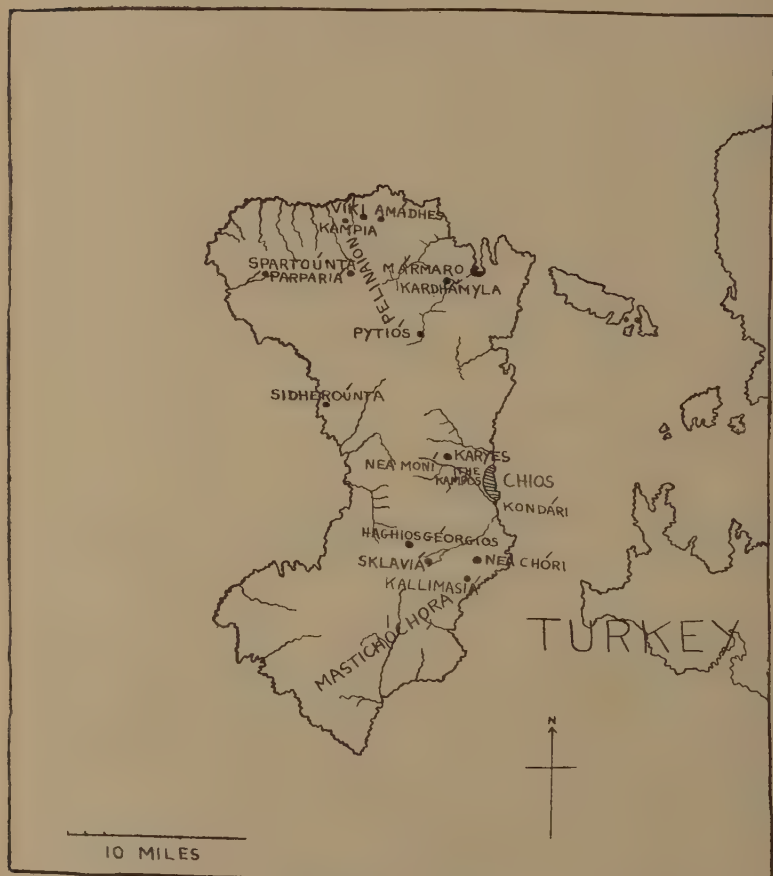


FIG. 1. Map of the island of Chios, showing the principal localities mentioned in the survey.

G. A. Olivier (1756–1814) and **J. G. Bruguère** (1750–1798) stayed in Chios from February to May 1794 in the course of their tour of the Orient; several plants new to the island were collected, but no mention of the botany of Chios is made in Olivier's subsequent account of the visit (*Voyage dans l'Empire Othoman, l'Egypte et la Perse*, Paris 1801–7) and the plants collected were named or listed by later authors.

Aucher-Éloy (1793–1838) travelling from Constantinople to Greece, called at Chios during the spring or early summer of 1836, and collected a considerable number of plants. Unfortunately the only record existing of this particular visit is contained in a letter to Naudin dated 20th September 1836, and this no more than mentions his arrival and departure. His Chian plants have been dealt with by Boissier and other authors.

In 1846 **Theodor von Heldreich** (1822–1902) afterwards Director of the Botanical Gardens at Athens, paid a brief visit to Chios, and subsequently described and published some of the plants collected in Boissier's *Diagnoses Plantarum Orientalium*; other Chian plants collected by von Heldreich are listed in Boissier's *Flora Orientalis*.

Ten years after von Heldreich's visit, in the spring of 1856, **Theodore Georg Orphanides** (1817–1886), Professor of Botany at Athens University, made extensive collections on the island. Duplicate specimens were widely distributed, and some of his Chian plants are preserved in the Kew herbarium. A detailed list of the specimens preserved in the Orphanides herbarium was published by von Heldreich in 1877, and contains many records from Chios.

F. W. Pauli resided in Chios *ca.* 1850 and collected a number of plants, which are listed by Haussknecht in this *Symbolae ad Floram Graecam* (1893–99). Pauli also mentions a few of the commoner wild and cultivated plants of the island in his essay, *Die Insel Chios* (*Mittheilungen der Geographischen Gesellschaft in Hamburg* 1880–81, pp. 99–114 : 1881).

The Orchids of Chios have been given particular attention by **J. Renz**, who made two journeys to the island, in May 1928 and May 1931, to study this fascinating order. The results of his investigations have been published in the *Flora Aegaea* (1943).

Dr. K. H. Rechinger fil. visited Chios, May 12–15, 1934, and records a number of plants new to the island in his *Flora Aegaea* (1943).

The collection which forms the basis of the present account of the flora of Chios was made during 1939 and the earlier part of 1940 by Mr. **J. W. O. Platt**. It remained in Chios throughout the war years, and was forwarded to Kew by Dr. P. Argenti in 1950. The specimens had suffered some injury from damp and insects during their long wait in Chios, but fortunately the bulk was in reasonably good condition on arrival at Kew, and few were so badly damaged as to be unidentifiable. The notes following the identifications are taken, with occasional necessary emendations, from the field records made by Mr. Platt. This data is a welcome addition to the bare commentary of locality and date given by earlier collectors.

ANALYSIS OF THE FLORA.

A total of 693 species and varieties of flowering plants and vascular cryptogams is included in this survey. This total compares favourably with the 427 species recorded by de Stefani, Barbey and Forsyth-Major from Samos, and 522 species recorded by the same authors from Karpathos. It is, however, considerably less than the very high total of

1266 species recorded by de Candargy from Lesbos, a discrepancy to be explained partly by the richness of the Lesbian flora, but, perhaps more satisfactorily, by the thoroughness of de Candargy's exploration and the very critical nature of his taxonomic research.

Additional work by Rechinger f. in Samos and Karpathos has added considerably to the number of plants recorded from these islands, and there is little doubt that careful exploration of Chios, especially of the mountainous regions of the island, would be similarly rewarded. Much work also remains to be done on the lower cryptogams—Fungi, Lichens, Algae and Bryophyta—at present scarcely anything is known about these groups in Chios. Of the 693 plants recorded from Chios, almost two thirds, 445 to be exact, are widespread in the Mediterranean, some (e.g. *Trifolium arvense*, *T. scabrum*, *Otanthus maritimus*, *Euphorbia peplis*) extending northwards to the British Isles and beyond. Most of this widespread Mediterranean element is concentrated on the coasts and lowlands (the Kámpos) of Chios, the higher ground shelters a greater percentage of species with a more restricted distribution, though not all the highland plants are local, nor, *vice versa*, have all the lowland and coastal plants wide geographic distributions. 184 plants with a more local, Eastern Mediterranean distribution are found in Chios, the majority of these are frequent on the mainland of Greece and continue eastwards along the coasts of Asia Minor and Palestine to Egypt, a few also extend westwards to Istria and Sicily, or along the coast of N. Africa to Algeria. *Thlaspi bulbosum* occurs on the mainland of Greece, on Ikaria and Chios, but has not been recorded from Asia Minor.

The two Mediterranean groups mentioned above together form the bulk of the Chian flora, but there are in addition two small groups:—38 plants with their centre of distribution in Turkey, and 26 plants apparently confined to the Aegean islands and western fringes of Asia Minor. The Turkish element in the Chian flora is to be expected in view of the fact that Chios is geologically no more than an extension of the Erythraean promontory, and separated from it, at one point, by a channel less than five miles wide. It is, in fact, surprising that the Turkish element is not greater. The majority of this group is known from other islands in the eastern Aegean, though some (e.g. *Leontice chrysogonum*, *Pteroccephalus pinardi*, *Anthemis smyrnaea*, *Crocus fleischeri*) are extremely rare beyond the mainland of Asia Minor; four (*Trifolium glanduliferum*, *Erum orientale*, *Asyneuma cichoriiforme*, *Allium reuterianum*) are new records for the Aegean islands, known hitherto only from Turkey and the Middle East.

The group of 26 plants confined to the Aegean islands and the western fringe of Asia Minor all have distinct Oriental affinities, and it is likely that many, if not all, will be found more abundantly in Turkey, when the Turkish flora is better known. Only a very few (e.g. *Astragalus trojanus* var. *chius*, *Lathyrus chius*, *Scabiosa polyceratis*, *Euphorbia cybirensis* var. *longifolia*) can be said to have their centre of distribution in Chios.

No endemic element is on record from the island save the critical *Senecio cineraria* var. *plattii* (? also in the Cyclades) and the cultivated, and doubtfully distinct, *Pistacia lentiscus* var. *chia*.

CLASSIFICATION AND NOMENCLATURE.

The arrangement of families and genera follows Bentham and Hooker, *Genera Plantarum*, the system most familiar to the majority of British taxonomists. Species are arranged by K. H. Rechinger's invaluable *Flora Aegaea*, a work necessary to anyone studying the plants of the area. One alteration has been made, perhaps *pro tempore*—the *subspecies*, at present so popular amongst Continental authors, has been very largely displaced in the present survey by the *variety* or *species*, a policy which has necessitated some nomenclatural changes. Otherwise the nomenclature follows that of the *Flora Aegaea* except where recent work has made an alteration obligatory.

Genera and species appearing in heavy (Clarendon) type are represented by specimens in the Platt collection. Those appearing in small capitals were not collected by Platt and are mainly records extracted from the *Flora Aegaea*, and added to the survey for the sake of completeness ; only a few of the specimens cited in small capitals have been examined or checked by the author.

LITERATURE.

A full list of literature relating to the Aegean flora will be found in K. H. Rechinger f., *Flora Aegaea* (in *Akademie der Wissenschaften in Wien*, **105**, 1, pp. xx + 924 : 1943), and a complete bibliography of Chios, including literature on all aspects of Natural History, has been compiled by P. Argenti (*Bibliography of Chios*, Clarendon Press Oxford, 1940). These two works, together with Boissier, *Flora Orientalis* and the *Florae Aegaeae Supplementum* of K. H. Rechinger f. (in *Phyton*, **1**, 194–228 : 1949) contain all, or nearly all, the useful references to the botany of Chios. No comprehensive list of Chian plants has been published hitherto.

ACKNOWLEDGMENTS.

The author wishes to thank all his colleagues at Kew who have helped to determine species included in this survey, or who have put at his disposal their knowledge and experience. He is also indebted to Dr. P. Argenti for assistance with literature, and for elucidating many points relating to the geography and place-names of Chios.

DICOTYLEDONES

RANUNCULACEAE

Clematis L.

C. cirrhosa L., Sp. Pl., ed. 1, 544 (1753) ; Rechinger f., Fl. Aegaea, 184 (1943).

The Kámpos area, very general, January 7, 1940, *Platt* 369 ; climber with yellow flowers.

C. flammula L., Sp. Pl., ed. 1, 544 (1753) ; Rechinger f., Fl. Aegaea, 184 (1943).

The Kámpos, June 12, 1939, *Platt* 277 ; climber with white flowers, in sunny positions.

Anemone L.

A. coronaria L., Sp. Pl., ed. 1, 539 (1753) ; Rechinger f., Fl. Aegaea, 182 (1943).

Throughout area, March 29, 1939, *Platt* 52 ; plants 6 to 15 ins. high with lavender, purple, white, cerise or wine-red flowers.

A. pavonina Lam., Encycl., **1**, 166 (1783) var. **pavonina**.

A. pavonina Lam. var. *typica* Halacsy, Consp. Fl. Gr., **1**, 5 (1900) ; Bowles and Stearn in Journ. Roy. Hort. Soc., **73**, 57-70 (1948).

Kampiá, April 16-17, 1939, *Platt* 151.

A. pavonina Lam. var. **purpureo-violacea** (Boiss.) Halacsy, Consp. Fl. Gr., **1**, 5 (1900) ; Bowles and Stearn in Journ. Roy. Hort. Soc., **73**, 57-70 (1948).

A. fulgens J. Gay var. *purpureo-violacea* Boiss., Fl. Or., **1**, 12 (1867).

A. hortensis L. var. *pavonina* (Lam.) Gren. and Godr. subvar. *purpureo-violacea* (Boiss.) Hayek, Prodr. Fl. Pen. Balc., **1**, 319 (1924) ; Rechinger f., Fl. Aegaea, 183 (1943).

Spartoúnta and hillsides throughout the island, April 18-19, 1939, *Platt* 161 ; herb 6 ins. high, flowers rich purple.

The taxonomy and nomenclature of *Anemone hortensis* L. and *A. pavonina* Lam. have been the subject of a recent study by E. A. Bowles and W. T. Stearn (*op. cit. supra*) ; the conclusions of these authors are followed in dealing with this difficult group of plants.

Adonis L.

A. annua L., Sp. Pl., ed. 1, 547 (1753) emend. Huds., Fl. Anglica, ed. 1, 209 (1762) ; Rechinger f., Fl. Aegaea, 195 (1943).

Spartoúnta, April 16-17, 1939, *Platt* 156 ; herb 6-9 ins. high, flowers red ; in moist open positions.

Ranunculus L.

R. ficaria L., Sp. Pl., ed. 1, 550 (1753) var. **ficaria**.

Ficaria verna Huds. ssp. *eu-verna* Hayek, Prodr. Fl. Pen. Balc., **1**, 327 (1924).

Pelinaíon, April 14-15, 1939, *Platt* 119 ; on grassy slopes, herb 3 ins. high.

R. ficaria L. var. **grandiflorus** (Rob.) Strobl in Oesterr. Bot. Zeitschr., **28**, 109 (1878).

R. ficaria L. var. *calthaeifolius* Guss., Fl. Sic. Syn., **2**, 41 (1843) *pro parte* ; Cosson, Comp. Fl. Atl., **2**, 19 (1883-1887).

Ficaria grandiflora Rob., Pl. Phan. Toul., 57 and 112 (1838) ; Rechinger f., Fl. Aegaea, 185 (1943).

R. calthaeifolius Jord., Obs. Pl. Nouv., **6**, 2 (1847).

R. ficaria grandiflorus Turrill in Bot. Mag., **153**, t. 9199 (1927).

The Kámpos, February 7, 1939, *Platt* 34 ; in ditches, herb 6 ins. high, flowers yellow.

I follow Cosson (*op. cit. supra*) in reducing this plant to varietal status. Flower-size and leaf-shape are both subject to considerable variation, and while the plant is, on the whole, sufficiently distinct from typical *R. ficaria* L. to merit some separate rank, examples intermediate in character between species and variety are too frequent to permit specific differentiation. Turrill (*loc. cit.*) has pointed out that the earlier varietal epithet, viz. var. *calthaeifolius* Guss. is based partly on the var. *grandiflorus* (Rob.) Strobl, and partly on typical *ficaria*, and is best avoided as a *nomen confusum* ; in deference to this view, I have used the later epithet, though it is with some hesitation that I cite Strobl as the combining author, for F. Schultz is frequently credited with making the combination ; apart, however, from one invalid publication of the varietal name (*Archives de Flore*, 123 (1855)) I have been unable to trace any evidence of his authorship, though it is possible that the *comb. nov.* was published by Schultz as a printed label and circulated with dried specimens of the plant.

R. sprunerianus Boiss., *Diagn.*, ser. 1, **1**, 64 (1842) ; Rechinger f., *Fl. Aegaea*, 190 (1943).

The Kámpos, April 2, 1939, *Platt* 60 ; herb 12 ins. high, flowers yellow, Amádhēs, June 4, 1939, *Platt* 570 ; herb with yellow flowers 8–12 ins. high.

The two gatherings represent extremes in the range of variation of *R. sprunerianus* ; no. 60 is a stout form with softly hairy stems and leaves, while no. 570 is a slender plant with thinly hirsute stems and subglabrous leaves ; whether such variants merit taxonomic distinction is a matter which can be judged only by observation in the field. A form of *sprunerianus* intermediate in character between the two numbers cited above was collected in Chios during 1836 (*Aucher-Eloy* 42). All three specimens are, unfortunately, without ripe carpels.

R. PSILOSTACHYS Gris. ; Rechinger f., *Fl. Aegaea*, 191 (1943).

Mt. Plaka, 780 m. *Rechinger f.* 5367.

R. gracilis Clarke, *Travels*, **2**, part 2, 336 (1814) ; DC., *Syst. Veg.*, **1**, 256 (1818).

R. agerii Bertol. in *Opusc. Sc. Bologna*, **3**, 182, t. 6 (1819).

R. peloponnesiacus Boiss., *Diagn.*, ser. 1, **1**, 63 (1842).

[*R. chaerophyllos* (non. L.) Halacsy, *Conspect. Fl. Gr.*, **1**, 15 (1900) ; Hayek, *Prodr. Fl. Pen. Balc.*, **1**, 334 (1924) ; Rechinger f. ; *Fl. Aegaea*, 191 (1943) et auct. mult.]

The Kámpos, March 24–28, 1939, *Platt* 11 ; banks and ditches herb 4–12 ins. high, leaves from a basal rosette, flowers solitary, yellow.

My colleague, Mr. N. Y. Sandwith, has examined the solitary specimen of *R. chaerophyllos*, which I regard as the type, preserved in the Linnean herbarium, and is satisfied that it cannot be identified with *R. gracilis* Clarke (*R. agerii* Bert.), but is perhaps *R. orientalis* L. (see also H. Trimen



FIG. 2. *Ranunculus gracilis* Clarke. Plant, natural size. Petal and sepal $\times 2$.
Stamen $\times 6$.

in *Journ. Bot.* (1872) **10**, 225-228). Unfortunately I have not been able to examine the type of *R. gracilis* though I am fairly certain that the name is correctly applied here. Taxonomy, I feel, would suffer no loss if the name *chaerophylos* were altogether abandoned; it was evidently ill understood by Linnaeus, and has been a bountiful source of error, ambiguity and confusion since his time.

R. marginatus *Urv.*, Enum., 62 (1822) var. **trachycarpus** (*Fisch. et Mey.*) *Azn.* in *Magy. Bot. Lap.*, **1**, 297 (1902); Rechinger f., *Fl. Aegaea*, 193 (1943).

R. trachycarpus *Fisch. et Mey.*, Ind. Sem. Hort. Petrop., **3**, 46 (1837).

Kardhámyla, April 11-13, 1939, *Platt* 101; moist, low-lying ground; yellow-flowered herb, 9 ins. high.

R. CHIOS *DC.*, Rechinger f., *Fl. Aegaea*, 193 (1943).

Recorded from Chios by *Olivier, Aucher-Eloy* and *Orphanides*.

R. arvensis *L.*, *Sp. Pl.*, ed. 1, 555 (1753); Rechinger f., *Fl. Aegaea*, 193 (1943).

The Kámpos, April 1, 1939, *Platt* 58; yellow-flowered herb, 4-8 ins. high, in fields and ditches.

R. trichophyllus *Chaix* ssp. **drouetii** (*F. Schultz*) *Clapham* in *Fl. Brit. Isles*, 97 (1952), det. **R. A. Blakelock**.

R. paucistamineus *Tausch*, in *Flora*, **17**, 525 (1834); Rechinger f., *Fl. Aegaea*, 194 (1943).

Kardhámyla, June 3, 1939, *Platt* 534; floating in water, white flowers $\frac{1}{4}$ ins. across.

Mr. **R. A. Blakelock** endorses the view, first expressed by **W. H. Pearsall** (*Rep. B.E.C.* **8**, 820; 1928), that *R. paucistamineus* is an aggregate, and rejects the name as of uncertain application.

Nigella L.

N. arvensis *L.*, *Sp. Pl.*, ed. 1, 534 (1753) var. **glaucescens** *Guss.*, *Pl. Rar.*, 216 (1826) Rechinger f., *Fl. Aegaea*, 178 (1943).

N. cretica *Mill.* *Dict.*, ed. 8, No. 4 (1768); *Halacsy*, *Consp. Fl. Gr.*, **1**, 28 (1901); *Hayek*, *Prodr. Fl. Pen. Balc.*, **1**, 305 (1924); Rechinger f., *Fl. Aegaea*, 179 (1943).

N. divaricata *Beaupré* ex *DC.*, *Syst. Veg.*, **1**, 329 (1817).

N. arvensis *L.* var. *divaricata* (*Beaupré*) *Boiss.*, *Fl. Or.*, **1**, 66 (1867).

N. arvensis *L.* var. *microcarpa* *Boiss.*, *Fl. Or.*, **1**, 66 (1867).

Pelinaíon, July 12, 1939, *Platt* 354; rough ground in sun, prostrate herb with pale blue flowers. The Kámpos, Sept. 26, 1939, *Platt* 599; on banks, prostrate herb with palest blue flowers.

Few small genera are so heavily weighed down with superfluous species and varieties as *Nigella*, and, within the genus, no species has suffered more from "splitting" than *Nigella arvensis* *L.* *Boissier* (*Fl. Or.* **1**, 65-66)

recognized the extreme polymorphism of *N. arvensis*, and endeavoured to compromise between excessive "lumping" and "splitting" by grouping under the species a large number of varieties. This course of action is followed here, with a reduction in the number of *N. arvensis* varieties. Examination of all the European and Oriental sheets of *N. arvensis* in the Kew herbarium satisfies me that no clear dividing line can be drawn between the prostrate small-leaved *cretica* forms and the more lush, suberect "*divaricata*".

Distinctions based on leaf-size and cutting, flower-size and sepal colour, size and sculpturing of carpel may be valid within circumscribed geographical areas, but, almost invariably, connecting forms will be found elsewhere. Seed and petal characters alone seem to provide constant, reliable specific characters, and, despite careful examination, I have failed to find, within *N. arvensis* L. aggr., characters which would call for specific differentiation. It is just possible that growing specimens might exhibit characters which are lost in dried material, but, if this is so, such characters have been overlooked by authors, for the distinctions drawn between the segregates of *arvensis* are all too obviously based on the study of herbarium specimens, and one cannot help feeling that more thorough investigation of the aggregate in the field might have very beneficial consequences so far as this group is concerned.

***N. arvensis* L. var. *involutrata* Boiss., Fl. Or., 1, 66 (1867).**

N. aristata Sibth. et Sm., Prodr. Fl. Gr., 1, 373 (1806); Halacsy, Consp. Fl. Gr., 1, 27 (1900); Hayek, Prod. Fl. Pen. Balc., 1, 305 (1924); Rechinger f., Fl. Aegaea, 178 (1943).

N. huthii Brand in Helios, 13, 26 (1896); Rechinger f., Fl. Aegaea, 179 (1943).

Pelinaion, July 12, 1939, Platt 356; Annual herb 4-6 ins. high, flowers blue.

The comments made under *N. arvensis* var. *glaucescens* apply here also. Typical *N. aristata* from the neighbourhood of Athens is readily distinguished by its well developed involucre and small densely muricate carpels, and would merit specific status if it were equally distinctive elsewhere; I find, however, that most of its characters tend to disappear the further one travels from Attica, and forms intermediate between it and *N. arvensis* var. *glaucescens* are frequent. The seeds and petals do not seem to be distinct from those of *N. arvensis*. Specimens of *N. huthii* in the Kew Herbarium differ from *N. arvensis* var. *involutrata* only in details which I consider of little taxonomic importance. It is significant that the specimens cited above come from the same area as Platt 354 named *N. arvensis* var. *glaucescens*, though the latter specimens differ markedly in leaf-size in the absence or very weak development of the involucre. Is it possible that the two numbers are merely sun and shade forms of one species?

***N. SATIVA* L. var. *BRACHYLOBA* Boiss.; Rechinger f., Fl. Aegaea, 179 (1943).**

Recorded from Chios by *Pauli*.

N. damascena L., Sp. Pl., ed. 1, 534 (1753) ; Rechinger f., Fl. Aegaea, 179 (1943).

Mastichóchora ; Amádhēs ; Karyés ; May 1, 1939, *Platt* 191, side of path, herb 1–2 feet high, flowers white.

Delphinium L.

D. staphisagria L., Sp. Pl., ed. 1, 531 (1753) ; Rechinger f., Fl. Aegaea, 180 (1943).

Amádhēs, June 4, 1939, *Platt* 246 ; cultivated ground, generally in shade ; annual 2 feet high, flowers blue.

D. peregrinum L., Sp. Pl., ed. 1, 531 (1753) ; Rechinger f., Fl. Aegaea, 180 (1943).

Amádhēs, June 1, 1939, *Platt* 236 ; on stony slopes ; annual 1–1½ feet high, flowers deep blue.

BERBERIDACEAE

Berberis L.

B. cretica L., Sp., Pl., ed. 1, 331 (1753) ; Rechinger f., Fl. Aegaea, 176 (1943).

Amádhēs, Pytiós area, June 5, 1939, *Platt* 592.

The Chian material cited above approaches *B. libanotica* Ehrb. in having distinctly reticulate-veined leaves occasionally spinose at the margins ; the latter species differs, however, in its larger leaves and stouter spines, though these differences, it must be confessed, are of doubtful taxonomic value.

LEONTICE L.

L. CHRYSOGONUM L. ; Rechinger f., Fl. Aegaea, 176 (1943).

Recorded from Chios by *Olivier*.

PAPAVERACEAE

Papaver L.

P. rhoeas L., Sp. Pl., ed. 1, 507 (1753) ; Rechinger f., Fl. Aegaea, 198 (1943).

The Kámpos, March 29, 1939, *Platt* 54 ; cornfields, annual 6–12 ins. high, flowers scarlet. Cultivated ground (no locality given) April 24, 1939, *Platt* 175 ; annual, 2 ft. high, flowers red. Stony places (no locality given), June 1, 1939, *Platt* 237 ; annual, 1 ft. high.

Three specimens mixed with nos. 54 and 175 have adpressed bristles on the peduncles though they do not seem to differ from typical *P. rhoeas* in any other respect. They should, perhaps, be referred to *P. rhoeas* var. *strigosum* Boenningh., which has been recorded from Chios (as *P. strigosum* (Boenningh.) Schur.) by Rechinger f., but, even as a variety, I feel that *strigosum* is of slight taxonomic significance.

P. DUBIUM L. var. **LAEVIGATUM** (M.B.) Elk., Rechinger f., Fl. Aegaea, 199.
Recorded from Chios, Mt. Plaka, 700 m. *Rechinger f.* 5380.

P. virchowii *Asch. et Sint.* ap. Boiss., Fl. Or. Suppl., 23 (1888) ; Rechinger f., Fl. Aegaea, 200 (1943).

Kampiá, April 16–17, 1939, *Platt* 149 ; annual.

A form with sparsely setose capsules, probably *f. paucisetosa* Fedde.

P. hybridum L., Sp., Pl., ed. 1, 506 (1753) ; Rechinger f., Fl. Aegaea, 200 (1943).

Without precise locality, *Platt* s.n., two specimens.

Glaucium Mill.

G. flavum *Grantz*, Stirp. Austr., 2, 133 (1769) ; Rechinger f., Fl. Aegaea, 196 (1943).

On or just above the beaches (no precise locality), May 1, 1939, *Platt* 189.

The specimens are without mature carpels, but are probably referable to the var. *leiocarpum* (Boiss.) Stoj. & Stef., rather than to typical *flavum*. A detailed account of the variation found within this species is given by Turrill in *Kew Bulletin*, 1933, 174–184.

Hypecoum L.

H. grandiflorum *Benth.*, Cat. Pyr., 91 (1826) ; Rechinger f., Fl. Aegaea, 200 (1943).

The Kámpos, Kampóchora, Febr. 14, 1939, *Platt* 33 ; on banks and in fields, herb 6 ins. high, *Corydalis*-like foliage, flowers yellow. The Kámpos, May 20, 1940, *Platt* 450 ; on dry rough ground ; herb 4 ins. high, flowers sulphur yellow, no precise locality, *Platt* 511A.

The distinctions between *Hypecoum grandiflorum* Benth. and *H. procumbens* L. are, I find, much more marked in western Europe than in eastern Europe or the Orient, and I suspect that a fair number of specimens from the eastern area labelled *H. procumbens* are, in fact, dwarfed or starved *H. grandiflorum*. Petal characters so often employed by authors in distinguishing the two species are subject to frequent exception, and in one of the gatherings cited above (no. 511A) a plant with the typical broad trilobed petals of *grandiflorum* is mixed with narrow-petalled *procumbens*-like specimens, though in other respects all the material is clearly referable to *grandiflorum*. True *procumbens* seems best distinguished by its few-flowered inflorescences, short-pedicelled flowers and conspicuous foliaceous bracts. *H. grandiflorum* has many-flowered, dichotomously-branched inflorescences, long-pedicelled flowers and filiform, inconspicuous bracts. In the fresh state flower-colour (yellow in *procumbens*, orange-tinged in *grandiflorum*) is probably a distinctive character, though (cf. *Platt* 511A) apparently not always a reliable one.

Corydalis Vent.

C. solida (L.) Su. var. **brachyloba** Boiss., Fl. Or., 1, 129 (1867).

Amádhēs area ; summit of Pelinaíon ; April 14–15, 1939, *Platt* 120 ; growing in shade of bushes with *Cyclamen neapolitanum*, *Crocus* sp. and *Galanthus* sp., foliage glaucous, plant 2–3 ins. high.

The identification is made with some diffidence, and additional material may show that the Chian plant, with broadly and bluntly lobed leaves and lax few-flowered inflorescences, is distinct. For the present, however, it is placed under var. *brachyloba* to which it is evidently related.

Fumaria L. (det. N. Y. Sandwith)

F. gaillardotii Boiss., *Fl. Or.*, **1**, 139 (1867) ; Rechinger f., *Fl. Aegaea*, 203 (1943).

Kondári, Febr. 9, 1940, *Platt* 380 ; on sandy stretch beyond beach ; herb 2 ins. high with red flowers.

F. macrocarpa Parl., *Pl. Nov.*, 5 (1842) ; Rechinger f., *Fl. Aegaea*, 203 (1943).

The Kámpos, April 11–13, 1939, *Platt* 105 ; on or near cultivated land, semi-prostrate annual 3 ins. high, flowers white. Kondári, Febr. 9, 1940, *Platt* 379 ; on sandy stretch beyond beach ; herb 3 ins. high with white flowers.

F. officinalis L., *Sp. Pl.*, ed. 1, 700 (1753) ; Rechinger f., *Fl. Aegaea*, 204 (1943).

The Kámpos, Febr. 2, 1939, *Platt* 63 ; in cornfields and on banks, and cultivated areas in general ; herb with red flowers.

F. micrantha Lag., *El. Hort. Matrit.*, 21 (1816) ; Boiss., *Fl. Or.*, **1**, 136 (1867).

The Kámpos, April 5, 1939, *Platt* 63A ; in cornfields and on banks, and cultivated areas in general ; herb with red flowers.

CRUCIFERAE

Matthiola R. Br.

M. tricuspidata (L.) R. Br. in Aiton, *Hort. Kew*, ed. 2, **4**, 120 (1812) ; Rechinger f., *Fl. Aegaea*, 219 (1943).

Cheiranthus tricuspidatus L., *Sp.*, *Pl. ed.* 1, 663 (1753).

Amádhēs, April 14–15, 1939, *Platt* 133 ; on sandy beach, similar habitat to that of *Poncratium maritimum* ; annual with handsome leaves and mauve flowers.

Rorippa Scop. (det. H. K. Airy-Shaw)

R. nasturtium-aquaticum (L.) Hayek, *Sched. Fl. Stir. Exs.*, 22 (1905). *Sisymbrium nasturtium-aquaticum* L., *Sp. Pl.*, ed. 1, 657 (1753).

Nasturtium officinale R. Br. in Ait., *Hort. Kew.*, ed. 2, **4**, 110 (1812) ; Rechinger f., *Fl. Aegaea*, 210 (1943).

Kardhámyla-Mármaro, May 26, 1939, *Platt* 254 ; Aquatic in flowing streams, 4 ins. high, flowers white ; Kardhámyla, June 3, 1939, *Platt* 532 ; in running water, 6-9 ins. high, flowers white.

This is *R. nasturtium-aquaticum* (L.) Hayek, *sens. strict.* ; *R. microphylla* (Boenn. ex Reichb.) Hyl. has not been recorded from the area.

Arabis L.

A. verna (L.) R. Br. in Aiton, Hort. Kew., ed. 2, **4**, 165 (1812) ; Rechinger f., Fl. Aegaea, 212 (1943).

Hesperis verna L., Sp. Pl., ed. 1, 664 (1753).

Kardhámyla, April 11-13, 1939, *Platt* 94 ; small herb with basal rosette ; flowers purple.

Aubrieta Adans.

A. deltoidea (L.) DC., Syst. Veg., **2**, 294 (1821) ; Rechinger f., Fl. Aegaea, 214 (1943).

Alyssum deltoideum L., Sp. Pl., ed. 2, 908 (1763).

Amádhēs, April 14-15, 1939, *Platt* 122 ; amongst stones ; flowers mauve.

Alyssum L.

A. saxatile L., Sp. Pl., ed. 1, 650 (1753) *sens. lat.* ; Rechinger f., Fl. Aegaea, 223 (1943).

Haghios Geórgios Sykoúsīs, March 29, 1939, *Platt* 46 ; on rocks and stony banks ; 6 ins. high, flowers yellow ; Kardhámyla, March 6, 1940, *Platt* 420.

The plants listed above probably come under the subspecies *megalocarpum* (Hausskn.) Rech. f., which has been recorded from Chios. All our material is, however, too immature to be assigned with certainty to any of the *saxatile* segregates.

A. fulvescens Sibth. et Sm., Prodr. Fl. Gr., **2**, 13 (1813) ; Rechinger f., Fl. Aegaea, 224 (1943).

Haghios Geórgios Sykoúsīs, March 29, 1939, *Platt* 38 ; sunny open hillside, alt. 350 m. amongst stones in heavy lime soil ; annual 1-3 ins. high, flowers yellow. Amádhēs, June 4, 1939, *Platt* 560 ; rocky ground, annual 3 ins. high, flowers yellow.

Erophila DC.

E. verna (L.) Chevall., Fl. Paris, **2**, 898 (1827) *sens. lat.*

Draba verna L., Sp. Pl., ed. 1, 642 (1753).

The Kámpos, Febr. 14, 1940, *Platt* 383 ; on dry river bank ; annual, $\frac{1}{2}$ ins. high, flowers white.

The specimens are too immature for critical determination, but the dimensions of one undeveloped silicle suggest *E. macrocarpa* (Boiss. et

Heldr.) Boiss., which is recorded from Ikaria and Samos. The classification of the W. European segregates of *E. verna* has been recently revised, with a considerable number of alterations, by Winge (*Compt. Rend. Trav. Lab. Carlsb.* **23**, no. 3, 41–73 ; 1940) ; it is clear that the E. European and Oriental segregates are in need of similar treatment.

Malcolmia R. Br.

M. flexuosa Sibth. et Sm., Fl. Graeca, **7**, 33 (1830) ; Rechinger f., Fl. Aegaea, 216 (1943).

Amádhēs, April 14–15, 1939, *Platt* 132 ; rocks and poor soil above beach ; annual 3–9 ins. high, flowers mauve-violet. Without precise locality, March 7, 1940, *Platt* 421 ; rocks above sea-shore, on low cliffs ; annual $\frac{1}{2}$ –1 $\frac{1}{2}$ ins. high, flowers mauve-pink.

M. chia (L.) DC., Syst. Veg., **2**, 440 (1821) ; Rechinger f., Fl. Aegaea, 217 (1943).

Cheiranthus chius L., Sp. Pl., ed. 1, 661 (1753).

Haghios Geórgios Sykoúsis, March 29, 1939, *Platt* 39 ; sunny slopes, amongst stones ; annual 1 ins. high, flowers pinky-mauve.

Erysimum L.

E. aciphyllum Boiss. in Fl. Or., **1**, 204 (1867) ; ? Ann. Sc. Nat., series 2, **17**, 80 (1842) ; Rechinger f., Fl. Aegaea, 208 (1943).

Pelinaíon, May 28, 1939, *Platt* 227 ; stony places below summit ; yellow flowers. Amádhēs, June 4, 1939, *Platt* 565 ; rocky ground ; herb 3–6 ins. high, flowers yellow.

The taxonomy and nomenclature of this attractive species is bewilderingly confused : *Aucher* 161 is the type number of two names—*Erysimum leptocarpum* Gay, Mon. Erys., 4 (published 20th Jan. 1842 *fide* Gay MS.) and *E. aciphyllum* Boiss. in Ann. Sc. Nat., series 2, **17**, 80 (published 18th March 1842 *fide* Gay MS.). In addition to these, a portion removed by Gay from the Paris material of *Aucher* 161 was described as a distinct species under the name *E. tenuissimum* Gay, Mon. Erys. (1842). In face of this, the name *E. aciphyllum* would appear to be invalid as a later synonym of *E. leptocarpum* and certainly not validated by Boissier's curious move in the *Flora Orientalis* **1**, 204, where the type material of *E. aciphyllum* (*Aucher* 161) is transferred to *E. leptocarpum* and a fresh series of specimens cited under *aciphyllum* and its var. *stylosum*. The problem is, however, made more complex by the fact that the specimen numbered *Aucher* 161 is described by Gay as fruiting material, without flowers, whereas Boissier describes *Aucher* 161 as flowering material lacking mature fruits. Is it possible that the two authors were in fact describing distinct plants, or is Boissier's *E. aciphyllum* identical with Gay's *E. tenuissimum* (based on flowering material only), or are the three names *leptocarpum*, *tenuissimum* and *aciphyllum* synonymous ? Until all the relevant material has been examined, I retain the name *aciphyllum* Boiss. *sensu* *Flora Orientalis* for the Chian material.

Hirschfieldia Moench

H. incana (Jusl.) Lagreze-Fossat, Fl. Tarn et Gar., 19 (1847) ; Rechinger f., Fl. Aegaea, 234 (1943).

Sinapis incana Jusl. in Linn., Cent. Pl., 1, 19 (1755).

The Kámpos, July 18, 1939, *Platt* 364 ; cultivated ground, herb 9–12 ins. high, flowers yellow.

Sinapis L.

S. alba L., Sp. Pl., ed. 1, 668 (1753) ; Rechinger f., Fl. Aegaea, 233 (1943).

The Kámpos, Febr. 14, 1940, *Platt* 387 ; cultivated ground ; annual 2 ft. high, flowers yellow.

Capsella Med.

C. bursa-pastoris (L.) Moench, Meth., 271 (1794) ; Rechinger f., Fl. Aegaea, 244 (1943).

Thlaspi bursa-pastoris L., Sp. Pl., ed. 1, 647 (1753).

The Kámpos, Febr. 14, 1940, *Platt* 384 ; banks and cultivated land ; annual, 3–15 ins. high, flowers white.

Lepidium L.

L. graminifolium L., Sp. Pl., ed. 2, 900 (1763) ; Rechinger f., Fl. Aegaea, 238 (1943).

The Kámpos, Sept. 26, 1939, *Platt* 604 ; roadside, herb 9–18 ins. high, flowers white.

L. PERFOLIATUM L. ; Rechinger f., Fl. Aegaea, 238 (1943).

Without precise locality, *Olivier* ; Spartoúnta, *Orphanides*.

L. HIRTUM (L.) DC. var. **HIRTUM** ; Rechinger f., Fl. Aegaea, 238 (1943).

Without precise locality, *Aucher-Eloy* 317.

Cardaria Desv.

C. draba (L.) Desv. in Journal de Botanique, 3, 163 (1814).

Lepidium draba L., Sp. Pl., ed. 1, 645 (1753).

The Kámpos, April 16–17, 1939, *Platt* 146 ; cultivated land ; herb 1 ft. high, flowers white. Amádhēs, June 4, 1939, *Platt* 546 ; rough or cultivated ground, herb 6–9 ins. high, flowers white.

Aethionema R. Br.

AE. POLYGALOIDES DC. ; Rechinger f., Fl. Aegaea, 241 (1943).

Collected by *Olivier* and *Orphanides*.

Ae. graecum Boiss. et Heldr. in Boiss., Diagn., 1, 6, 16 (1845) ; Rechinger f., Fl. Aegaea, 241 (1943).

Ae. creticum Boiss. et Heldr. in Boiss., Fl. Or. Suppl., 61 (1888) ; Rechinger f., Fl. Aegaea, 241 (1943).

Haghios Geórgios Sykoúsis, March 29, 1939, *Platt* 40 ; on rocks ; herb 1–2 ins. high, flowers white flushed pink. Kampiá, April 16–17, 1939, *Platt* 153 ; rocks, generally in sun, but sometimes in shade ; herb to 6 ins. high, flowers mauve.

In the absence of constant, reliable distinguishing characters, *Ae. graecum* and *Ae. creticum* are united. Leaves, inflorescences and silicles are all variable in shape and size, and even in the small quantity of Chian material seen, some individual plants could be referred to *graecum*, whilst others would be placed under *creticum*. Mature fruits are wanting in both numbers, but, as with most of the material from Eastern Aegaeon, the silicles tend to be more orbicular, and more definitely emarginate at apex and base than is usual in *Ae. graecum* from the mainland of Greece. Hayek is perhaps justified in regarding *graecum* as a subspecies of *Ae. saxatile* (L.) R. Br. The distinctions between *graecum* and *ovalifolium* (DC.) Boiss. also require elucidation.

Biscutella L.

B. ciliata DC. in Ann. Mus. Hist. Nat. Par., 18, 297 (1811) ; Rechinger f., Fl. Aegaea, 239 (1943).

Kampóchora, Febr. 25, 1940, *Platt* 399 ; wheat fields ; annual 3–6 ins. high, flowers yellow.

Thlaspi L.

T. bulbosum Sprun. in Boiss., Diagn., 1, 1, 74 (1845) ; Rechinger f., Fl. Aegaea, 242 (1943).

Amádhēs, April 14–15, 1939, *Platt* 121 ; sunny, grassy slopes ; upright stems 1–3 ins. high, flowers mauve.

An interesting plant, with only one other Asian record (Ikaria, Mt. Atheras, *Rechinger* f. 4443). The Ikarian and Chian specimens are very similar and differ from typical *bulbosum* in having smaller, paler flowers.

Iberis L.

I. spruneri Jord., Obs. 6, 43 (1847).

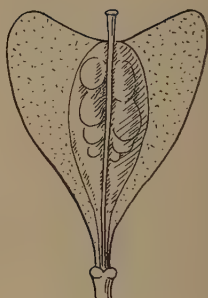
I. tenoreana DC. var. *spruneri* (Jord.) Halacsy, Consp. Fl. Gr., 1, 106 (1901) ; Rechinger f., Fl. Aegaea, 240 (1943).

I. olympica Boiss., Diagn., 2, 1, 27 (1853).

[*I. carica* (non Bornm.) *Rechinger* f., Fl. Aegaea, 240 (1943)].

Pelinaíon, June 4, 1939, *Platt* 569 ; herb 2–3 ins. high, flowers white.

The relationship between *I. spruneri* Jord. and *I. tenoreana* DC. is undoubtedly a very close one, but I find that the former is generally distinguished by its clearly marked rosette of entire (or almost entire), spatulate basal leaves, and linear or oblanceolate cauline leaves. *I. tenoreana* is more shrubby in habit, the basal rosette seldom distinct, and the leaves shorter, broader and usually with distinct toothings. The fruit



DRT

FIG. 3. *Thlaspi bulbosum* Sprun. Plant, natural size. Flower and floral analysis $\times 6$.
Fruit $\times 6$.

differences are less certain. *I. olympica* is merely a small state of *spruneri*, the leaves perhaps a little more fleshy and the flowers a little paler than is common in typical *spruneri*. *I. carica* Bornm. with very narrow leaves and small flowers, appears to be distinct from *spruneri*, but is probably synonymous with *I. pinardi* Jord. from the same area. The Pinard specimens are without fruit, and the Bornmüller specimens are almost past the flowering stage, so that it is not possible to make an accurate comparison. None of the Samos material cited by Rechinger under the name *I. carica* Bornm. resembles the Bornmüller or the Pinard specimens from Caria.

The status of *I. attica* Jord. (*I. jordani* Boiss.) is more doubtful: Jordan correctly distinguished a small-flowered and a large-flowered Candytuft from Mt. Hymettus (Obs. 6, 42: 1847), but whether these are distinct species or distinct forms of one species cannot be judged without observation in the field. Boissier incorrectly renamed *I. attica* Jord. as *I. jordani* Boiss. (Diagn., 2, 1, 38; 1853) because he believed Jordan was wrong in stating that his material came from Attica—curiously enough, specimens of *I. spruneri* and *I. attica* were both gathered on Mt. Hymettus by Boissier himself during April, 1842, so that Jordan's statements are not necessarily incorrect.

TEESDALIA R. Br.

T. CORONOPIFOLIA (*Bergeret*) Thell.; Rechinger f., Fl. Aegaea, 243 (1943).

Collected by Olivier in Chios.

CLYPEOLA L.

C. MICROCARPA Moris.; Rechinger f., Fl. Aegaea, 228 (1943).

Collected in Chios by Orphanides.

NESLIA Desv.

N. APICULATA Fisch. et Mey.; Rechinger f., Fl. Aegaea, 244 (1943).

Collected in Chios by Orphanides.

CAPPARIDACEAE

Capparis L.

C. spinosa L., Sp. Pl., ed. 1, 503 (1753).

C. sicula Duh., Arbr., ed. 2, 1, 159 (1801); Rechinger f., Fl. Aegaea, 206 (1943).

Hanging from walls, ditches and rocks (no precise locality), July 21, 1939, Platt 318; 1 ft. high, flowers white and lavender.

RESEDACEAE

Reseda L.

R. lutea L., Sp. Pl., ed. 1, 449 (1753); Rechinger f., Fl. Aegaea, 246 (1943).

General in dry places (no precise locality), April 24, 1939, Platt 173; perennial, 12–15 ins. high, flowers creamy white.

CISTACEAE

Cistus *L.*

C. villosus *L.* var. **creticus** (*L.*) *Boiss.*, *Fl. Or.*, **1**, 437 (1867).

C. creticus *L.*, *Sp. Pl.*, ed. 2, 738 (1763).

C. villosus *L.* ssp. *creticus* (*L.*) *Hayek*, *Prodr. Fl. Pen. Balc.*, **1**, 489 (1925) ; *Rechinger f.*, *Fl. Aegaea*, 247 (1943).

Kardhámyla-Mármaro, April 11-13, 1939, *Platt* 98 ; sunny slopes, with *C. salvifolius* and *Lavandula stoechas* ; shrub 2½ ft. high with purple flowers.

C. parviflorus *Lam.*, *Encycl.*, **2**, 14 (1768) ; *Rechinger f.*, *Fl. Aegaea*, 248 (1943).

Sidheroúnta, April 11-13, 1939, *Platt* 97 ; rocks and slopes amongst pines ; shrub 2½ ft. high, flowers pink.

C. salvifolius *L.*, *Sp. Pl.*, ed. 1, 524 (1753) ; *Rechinger f.*, *Fl. Aegaea*, 248 (1943).

Kardhámyla-Mármaro, April 11-13, 1939, *Platt* 99 ; poor open sunny ground ; shrub 1 ft. high.

Helianthemum *Boehm.*

H. nummularium (*L.*) *Mill.* var. **graecum** (*Boiss. et Heldr.*) *Boiss.*, *Fl. Or.*, **1**, 447 (1867).

H. graecum *Boiss. et Heldr.* in *Boiss.*, *Diagn.*, **2**, **1**, 52 (1853).

H. nummularium (*L.*) *Mill.* f. *graecum* (*Boiss. et Heldr.*) *Janch. in Mitt. Nat. Ver. Univ. Wien*, **7**, 45 (1909) ; *Rechinger f.*, *Fl. Aegaea*, 251 (1943).

Amádhēs, Pytiós area, June 5, 1939, *Platt* 576 ; on rocky ground, woody perennial 3 ins. high, flowers yellow.

H. guttatum (*L.*) *Mill.*, *Dict.*, ed. 8, no. 18 (1768).

Cistus guttatus *L.*, *Sp. Pl.*, ed. 1, 526 (1753).

Tuberaria guttata (*L.*) *Fourr. in Ann. Soc. Linn. Lyon. n.s.*, **16**, 340 (1868) ; *Rechinger f.*, *Fl. Aegaea*, 249 (1943).

Kardhámyla-Mármaro, April 11-13, 1939, *Platt* 110.

H. LAVANDULIFOLIUM *Mill.* is also recorded from the island by *Pauli* (see *Rechinger f.*, *Fl. Aegaea*, 250).

Fumana (*Dun.*) *Spach*

F. arabica (*Jusl.*) *Spach* in *Ann. Sc. Nat.*, 2 ser., **6**, 359 (1836) ; *Rechinger f.*, *Fl. Aegaea*, 252 (1943).

Cistus arabicus *Jusl. in Linn., Cent. Pl.*, **1**, pl. 14 (1755).

Kardhámyla-Mármaro, April 14, 1939, *Platt* 110 ; on hot dry slopes of hillsides ; shrubby, 6 ins. high, flowers yellow. Kardhámyla, April 11-13, 1939, *Platt* 115 ; sunny slopes amongst *Cistus* ; dwarf shrub with yellow flowers.

F. laevis (Cav.) Sennen in Ann. Soc. Linn. Lyon., n.s., **71**, 9 (1925).

Cistus laevis Cav., Icones, **2**, 35 (1793).

F. thymifolia (L.) Verl. var. *laevis* (Cav.) Grosser in Engl. Pflanzenr., **4**, 193, 130 (1903) ; Rechinger f., Fl. Aegaea, 252 (1943).

Without precise locality, or date, *Platt* s.n.

F. procumbens (Dunal) Gren. et Godr., Fl. Fr., **1**, 173 (1848).

Helianthemum procumbens Dunal in DC., Prodr., **1**, 275 (1824).

Cistus fumana L., Sp. Pl., ed. 1, 525 (1753).

F. vulgaris Spach, Ann. Sc. Nat., 2 ser., **6**, 359 (1836).

Summit of Pelinaíon, July 9, 1939, *Platt* 334 ; shrub 4 ins. high, flowers yellow.

FRANKENIACEAE

Frankenia L.

F. hirsuta L., Sp. Pl., ed. 1, 331 (1753) ; Rechinger f., Fl. Aegaea., 258 (1943).

Kondári, July 19, 1939, *Platt* 310 ; near beach, prostrate herb with pink flowers.

POLYGALACEAE

POLYGALA L.

P. MONSPELIACA L. is recorded from Chios in Rechinger f., Fl. Aegaea, 284.

CARYOPHYLLACEAE

Dianthus L. (det. D. E. Wiltshire)

D. actinopetalus Fenzl var. **elegans** (Urv.) Boiss., Fl. Or., **1**, 500 (1867) ; Rechinger f., Fl. Aegaea, 156 (1943).

D. elegans Urv. in Mem. Soc. Linn. Par., **1**, 302 (1822).

Just below summit of Pelinaíon, July 9, 1939, *Platt* 329 ; amongst stones and rocks, 3 ins. high, flowers pink.

The specimen is evidently from an exposed site and is very much more dwarf than is usual in the variety ; in all essential characters, however, it belongs here, differing from *D. zonatus* Fenzl, which has been recorded from Chios, in petal size and colour.

D. ZONATUS Fenzl ; Rechinger f., Fl. Aegaea, 157 (1948).

Mt. Plaka, 800 m., *Rechinger f.* 5393.

Kohlrauschia Kunth

K. velutina (Guss.) Rech., Icones, **4**, 43 (1844) ; Rechinger f., Fl. Aegaea, 151 (1943).

Dianthus velutinus Guss. (? Ind. Sem. H. R. Bocc., 1825) ; Pl. Rar., 166 (1826).

Sunny banks below Amádhēs, April 14–15, 1939, *Platt* 126 ; annual 3–9 ins. high ; flowers pink.

Tunica Scop.

T. Argentii Meikle, sp. nov. *T. armerioides* (Ser.) Hal. affinis, sed inflorescentiis laxioribus et foliis longioribus, sensim acuminatis, valde differt.

? *T. armerioides* (Ser.) Hal. var. *laxa* Bornm. et Rech. f. in Beih. v. Bot. Centralb., **54**, 614 (1936) ; Rechinger f., Fl. Aegaea, 151 (1943).

Herba perennis e radice lignosa, squamosa, exorta ; caules basi multiramosi, parte superiore indivisi, glabri, glaucescentes, usque 30 mm. alti, foliis oppositis marcescentibus vestiti. **Folia** opposita adscendentia, lineari-subulata sensim acuminata, basi in vaginam brevem connata, nodos tumidos circumdata, glabra, glaucescentia, trinervia, marginibus integris vel leviter serrulatis. **Inflorescentia** subterminalis, ramulosa, paniculata, usque 13 cm. longa et 7 cm. lata ; inflorescentiae ramuli glabri vel sparse glandulosi ; bractae glandulosae, marginibus serrulatis saepe ciliatis ; pedunculi circiter 5–8 mm. longi, plerumque viscoso-glandulosi ; calyx cylindricus vel anguste campanulatus, circiter 5 mm. longus et apice 2 mm. latus, costis 5 trinerviis ornatus, $\pm$ dense viscoso-glandulosus, apice in dentes 5 deltoideos membranaceos productus ; petala alba, glabra (marginibus raro ciliatis), ligulata usque 7–8 mm. longa, trinervia, basi in unguem brevem sensim coartata ; stamina 10, filamentis 5 brevibus circiter 5 mm. longis, aliis longioribus, usque 7–8 mm. longis ; antherae flavae circiter 0.5 mm. diametro ; ovarium glabrum, anguste ovoideum, usque 1.5 mm. longum ; stigmata 2, filiformia, circiter 1.5 mm. longa.

Chios : Pelinafon, July 12, 1939, *Platt* 349 (typus in herb. Kew.) ; amongst stones ; perennial 6–8 ins. high with white flowers.

Greece : Without locality, *Zuccarini* no. 592 in herb. Benth., coll. 1836 ; near Asine (Argolis), June 1931, *S. C. Atchley* 1103 ; on rocky hillsides.

This species stands intermediate between *T. illyrica* (L.) Fisch. et Mey. and *T. armerioides* (Ser.) Hal. ; from the former, with which it has in the past been confused, it differs in having a rather dense subterminal inflorescence with ascending branches, and in the distinctly 3-nerved ribs of the calyx ; from the latter, to which it is most closely related, *T. Argentii* can be readily distinguished by its longer, gradually acuminate leaves, and much more laxly branched inflorescence. I have not seen authentic material of *T. armerioides* (Ser.) Hal. var. *laxa* Bornm. et Rech. f. (recorded from Chios and Samos) but suspect that this variety is identical with *T. Argentii*. The species is named in honour of Dr. Philip Argenti, who initiated and organized the botanical investigation of Chios, upon which the present survey is based.

Vaccaria Med.

V. pyramidata Medik., Phil. Bot., **1**, 96 (1789) ; Rechinger f., Fl. Aegaea, 149 (1943).

Saponaria vaccaria L., Sp. Pl., ed. 1, 409 (1753).

The Kámpos, June 2, 1940, *Platt* 519 ; cultivated ground ; annual 2 ft. high with pink flowers.

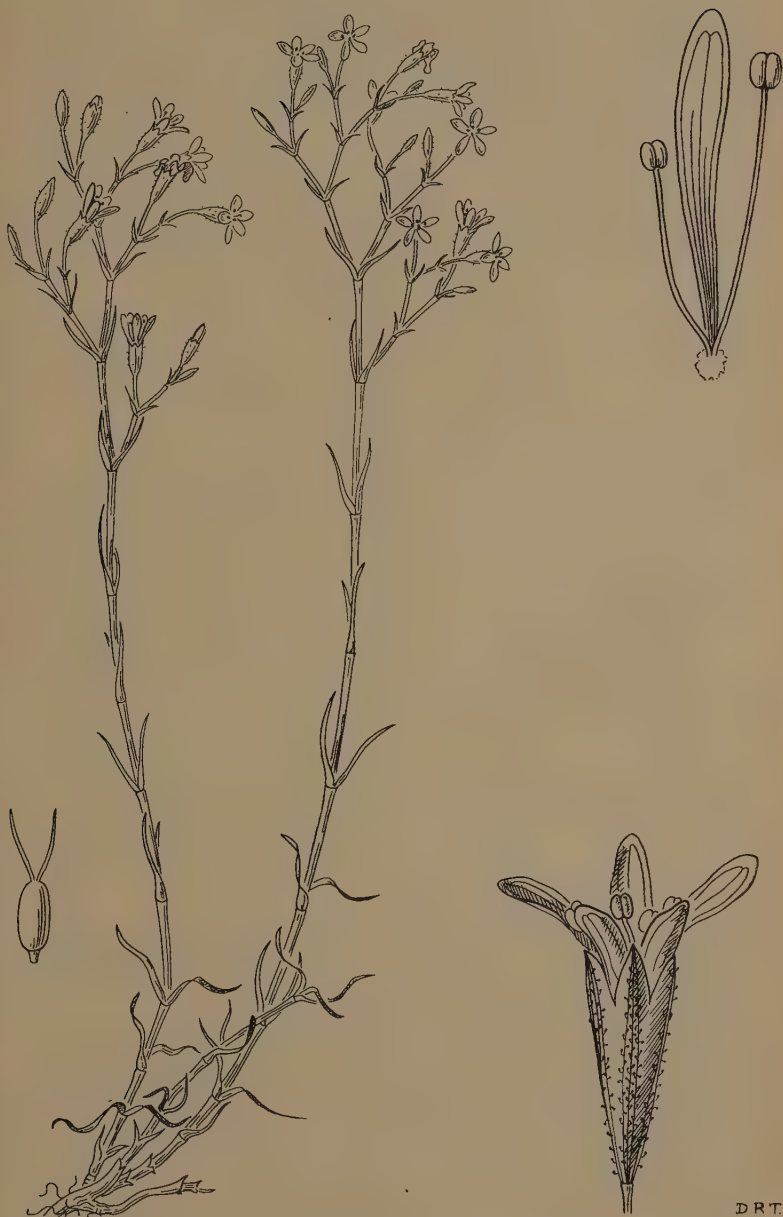


FIG. 4. *Tunica Argentea* Meikle. Plant, natural size. Flower; petal and stamens (attached to portion of receptacle), and ovary $\times 6$.

Silene L.

S. cucubalus *Wib.*, Fl. Werth., 241 (1799) ; Rechinger f., Fl. Aegaea, 164 (1943).

Cornfields, without precise location, April 24, 1939, *Platt* 174 ; annual, 2 ft. high.

S. fabaria *Sibth. et Sm.*, Prodr., **1**, 293 (1806) ; Rechinger f., Fl. Aegaea, 165 (1943).

Cultivated slopes above Amádhēs, June 3, 1939, *Platt* 244 ; herb 1–1½ ft. high, flowers white. Above beach beyond Kardhámyla, June 3, 1939, *Platt* 542 ; herb 18 ins. high, flowers white.

S. CAESIA *Sibth. et Sm.* ; Rechinger f., Fl. Aegaea, 165 (1943).

Without precise locality, *Orphanides*.

S. TRINERVIA *Seb. et Maur.* ; Rechinger f., Fl. Aegaea, 167 (1943).

Without precise locality, *Aucher-Eloy* 457.

S. NOCTURNA *L.* ; Rechinger f., Fl. Aegaea, 167 (1943).

Without precise locality, *Aucher-Eloy* 478.

S. colorata *Poir.*, Voy. Barb., **2**, 163 (1789) ; Rechinger f., Fl. Aegaea, 168 (1943).

Kardhámyla-Mármaro, April 14, 1939, *Platt* 108 ; cultivated land just behind the shore ; annual 3–4 ins. high, flowers pink. Near beach at Kondári, July 19, 1939, *Platt* 311 ; annual, 1–2 ins. high, flowers pink. No precise location, March 7, 1940, *Platt* 423 ; riverbed, herb 6 ins. high, flowers pink.

S. colorata *Poir.* var. **decumbens** (*Biv.*) *Rohrb.*, Monogr. *Silene*, 115 (1868) ; Rechinger f., Fl. Aegaea, 168 (1943).

S. decumbens *Biv.* *Sicul. Pl. Cent.*, **1**, 75 (1806).

Kondári, Febr. 9, 1940, *Platt* 381 ; on sandy stretch beyond beach, prostrate herb, flowers pink.

S. COLORATA *Poir.* var. **STENOPHYLLA** *Boiss.* ; Rechinger f., Fl. Aegaea, 168 (1943).

Without precise locality. *Aucher-Eloy* 479.

S. urvillei *Schott* in *DC.*, Prodr., **1**, 377 (1824) ; Rechinger f., Fl. Aegaea, 169 (1943).

Pelinaíon, June 4, 1939, *Platt* 574 ; herb 6–12 ins., flowers chocolate and green.

S. cretica *L.*, Sp. Pl., ed. 1, 420 (1753) ; Rechinger f., Fl. Aegaea, 171 (1943).

Kampiá, April 16–17, 1939, *Platt* 155 ; rocky places ; annual 9 ins. high with distinct basal rosette, flowers pink.

S. gigantea L., Sp., Pl., ed. 1, 418 (1758) ; Rechinger f., Fl. Aegaea, 172 (1943).

? Pathside near Zyfiá, May 30, 1940, *Platt* 504.

The locality given above may be incorrect, for it is clear that the notes accompanying the specimen ("prostrate, white flowers") do not relate to *S. gigantea*.

S. SIEBERI Fenzl ; Rechinger f., Fl. Aegaea, 173 (1943).

Mt. Plaka, 900 m., *Rechinger* f. 5398.

HOLOSTEUM L.

H. UMBELLATUM L. f. **GLANDULOSUM** Vis. ; Rechinger f., Fl. Aegaea, 143 (1943).

Pelinaíon, 4,000 ft., *Orphanides*.

Cerastium L.

C. glomeratum Thuill., Fl. Par., ed. 2, 226 (1824) ; Rechinger f., Fl. Aegaea, 146 (1943).

The Kámpos, 1939, *Platt* 14 ; annual with white flowers.

C. LURIDUM Guss. ssp. **MEDITERRANEUM** Lons., Rechinger f., Fl. Aegaea, 147 (1943).

Mt. Plaka, 700 m., *Rechinger* f. 5403.

Stellaria L.

S. media (L.) Vill., Hist. Pl. Dauph., 3, 615 (1789) ; Rechinger f., Fl. Aegaea, 148 (1943).

Alsine media L., Sp. Pl., ed. 1, 272 (1753).

The Kámpos, Febr. 14, 1940, *Platt* 386 ; cultivated ground ; annual 3 ins. high with white flowers.

Arenaria L.

A. pubescens Urv., Mem. Soc. Linn. Par., 1, 306 (1822) ; Rechinger f., Fl. Aegaea, 140 (1943).

Nea Moní, May 4, 1939, *Platt* 204 ; growing on rocks, herb with white flowers. Amádhēs, May 6, 1939, *Platt* 257 ; walls etc., herb. 2-3 ins. high with white flowers.

A. MURALIS (Link) Sieb. ex Spreng. ; Rechinger f., Fl. Aegaea, 140 (1943).

Without precise locality, *Olivier & Bruguière*.

Minuartia Loefl. ex L.

M. TENUIFOLIA (L.) Hiern ssp. **HYBRIDA** (Vill.) Mattf. ; Rechinger f., Fl. Aegaea, 135 (1943).

Without precise locality, *Pauli* ; Mt. Plaka, 700 m., *Rechinger* f. 5399.

M. verna (L.) Hiern var. **acutipetala** Boiss., Fl. Or., **1**, 676 (1867).

Alsine attica Boiss. et Spr. in Boiss., Diagn., **1**, **5**, 84 (1844).

M. verna (L.) Hiern ssp. *attica* (Boiss. et Spr.) Hay., Oesterr. Bot. Zeitschr., **71**, 112 (1922) ; Rechinger f., Fl. Aegaea, 137 (1943).

No locality given, *Platt* s.n.

MOENCHIA Ehrh.

M. GRAECA Boiss. et Heldr. ; Rechinger f., Fl. Aegaea, 143 (1943).

Without precise locality, *Orphanides*.

SAGINA L.

S. MARITIMA G. Don ; Rechinger f., Fl. Aegaea, 142 (1943).

Without precise locality, *Orphanides*.

Spargularia Pers.

S. salina Presl., Fl. Cechica, 95 (1819) ; Rechinger f., Fl. Aegaea, 132 (1943).

Kardhámyla, June 3, 1939, *Platt* 529 ; herb 4 ins. high with white flowers.

The specimens are young and without ripe capsules, but evidently belong here despite the white flowers, an unusual feature for this species, if the colour-notes are strictly correct.

HYPERICACEAE

Hypericum L.

H. empetrifolium Willd., Sp. Pl., **3**, 1452 (1803) ; Rechinger f., Fl. Aegaea, 262 (1943).

Kallimasiá, May 1, 1939, *Platt* 188 ; herb 2 ft. high, flowers yellow.

H. crispum L., Mantissa, 106 (1767) ; Rechinger f., Fl. Aegaea, 263 (1943).

The Kámpos, July 12, 1939, *Platt* 362 ; sunny banks and cultivated ground, general ; herb 1 ft. high, flowers yellow.

H. lanuginosum Lam., Encycl., **4**, 171 (? 1797).

H. atomarium Boiss. Diagn. **1**, **8**, 114 (1849) ; Rechinger f., Fl. Aegaea, 264 (1943).

Amádhes, May 31, 1939, *Platt* 233 ; sunny stony banks ; herb 1 ft. high, flowers yellow. Amádhes to high up on Pelinaíon, July 8, 1939, *Platt* 322 ; sunny, rocky ground ; herb 3-6 ins. high with yellow flowers.

The two numbers differ markedly in height and habit ; the second set (*Platt* 322) being dwarf and sub-procumbent, and probably gathered from some exposed site, perhaps at a considerable altitude.

MALVACEAE

Malope L.

M. malacoides L., Sp. Pl., ed. 1, 692 (1753) ; Rechinger f., Fl. Aegaea, 270 (1943).

Kampóchora, May 6, 1939, *Platt* 211 ; dry and stony places, spreading herb, 6 ins. high with purple-crimson flowers.

Althaea L.

A. cretica Weinm., Syll. Pl. Nov., 2, 171 (1828).

A. meonantha Link in Linnaea, 9, 586 (1835).

A. apterocarpa Fenzl, Cat. Hort. Vindob., 1858.

[*A. rosea* auct. non (L.) Cav., Monadelph. Diss., 2, 91 (1790) ; Rechinger f., Fl. Aegaea, 270 (1943).]

Generally cultivated, June 18, 1939, *Platt* 281 ; sunny ground, herb 3 to 4 ft. high with mauve flowers. Without locality, July 17, 1939, *Platt* 360.

The name *Althaea rosea* (L.) Cav. (*Alcea rosea* L.) should be applied to the Hollyhock of W. European gardens, and not, as is frequently done, to the present plant, which differs widely in its dense stellate-tomentose stems and leaves, and much narrower petals. The origin of true *A. rosea* L. is not easily traced, but it may have been derived from *A. pontica* Janka, *A. setosa* Boiss., or a related Oriental species, perhaps crossed with *A. cretica* or *A. pallida* (W. & K.) Nym. The relationship between *A. cretica* and *A. pallida* is extremely close, though in most cases the latter can be distinguished by its narrow bi-lobed petals, conspicuously pale towards the base, and more especially by the sparse $\pm$ unbranched, adpressed indumentum of the upper leaf-surface. Some specimens from N. Macedonia and S. Jugoslavia tend to grade into *A. cretica*, though they lack the dense stellate indumentum of this species. I have not been able to find any satisfactory character to separate *A. cretica* and *A. apterocarpa*.

Lavatera L.

L. unguiculata Desf., Hist. des Arbres, 1, 471 (1809) ; Rechinger f., Fl. Aegaea, 268 (1943).

General, June 30, 1939, *Platt* 309 ; sunny places, herb 3 ft. high, flowers mauve.

Malva L.

M. cretica Cav., Monadelph. Diss., 2, 67 (1790) ; Rechinger f., Fl. Aegaea, 266 (1943).

Kardhámyla, April 11-13, 1939, *Platt* 87 ; poor stony soil on open pine slopes ; annual 1 ins. high with pink flowers. The Kámpo, cultivated ground, May 26, 1940, *Platt* 463 ; herb 6 ins. high, flowers mauve-pink.

M. silvestris L. var. **eriocarpa** Boiss., Fl. Or., 1, 819 (1867) ; Rechinger f., Fl. Aegaea, 267 (1943).

The Kámpos, general, April 22, 1939, *Platt* 170 ; prostrate herb, 4 ins. high, flowers purple.

M. montana *Forsk.*, *Fl. Aegypt.-Arab.*, 124 (1775) ; Rechinger f., *Fl. Aegaea*, 267 (1943).

M. nicaeensis *All.*, *Fl. Ped.*, **2**, 40 (1785).

The Kámpos, May 24, 1940, *Platt* 464 ; cultivated ground ; herb 9 ins. high with small mauve flowers and large leaves.

LINACEAE

Linum L.

L. gallicum L., *Sp. Pl.*, ed. 2, 401 (1762) ; Rechinger f., *Fl. Aegaea*, 272 (1943).

Kampiá, May 6, 1939, *Platt* 265 ; moist but sunny bank on peat ; annual 6 ins. high with yellow flowers. Dry places amongst stones, *Platt* 497 ; annual 6 ins. high with yellow flowers (no precise locality).

L. strictum L., var. **spicatum** *Pers.*, *Syn.*, **1**, 336 (1805) ; Rechinger f., *Fl. Aegaea*, 272 (1943).

Without precise locality, May 28, 1940, *Platt* 485 ; slopes on stony ground ; annual 3–9 ins. high, flowers yellow.

L. nodiflorum L., *Sp. Pl.*, ed. 1, 280 (1753) ; Rechinger f., *Fl. Aegaea*, 273 (1943).

Haghios Constantinos, May 27, 1940, *Platt* 472 ; dry slopes, annual 2–6 ins. high, flowers yellow.

L. bienne *Mill.*, *Dict.*, ed. 8, no. 8 (1768).

L. angustifolium *Huds.*, *Fl. Angl.*, ed. 2, 134 (1778) ; Rechinger f., *Fl. Aegaea*, 274 (1943).

The Kámpos, May 20, 1940, *Platt* 447 ; annual 9–12 ins. high, flowers blue.

GERANIACEAE

Geranium L.

G. molle L., *Sp. Pl.*, ed. 1, 682 (1753) ; Rechinger f., *Fl. Aegaea*, 276 (1943).

The Kámpos, February 27, 1940, *Platt* 402 ; annual 6–9 ins. high, flowers pink, petals divided.

G. dissectum *Jussl.* in L., *Cent. Pl.*, **1**, par. 61 (1755) ; Rechinger f., *Fl. Aegaea*, 276 (1943).

The Kámpos, February 15, 1940, *Platt* 396 ; cultivated land ; herb 6 ins. high, flowers pink.

G. rotundifolium L., Sp. Pl., ed. 1, 683 (1753) ; Rechinger f., Fl. Aegaea, 277 (1943).

The Kámpos, February 2, 1939, *Platt* 12 ; amongst grass, prostrate ; round divided foliage ; flowers purple-pink, very small.

Erodium *L'Hérit.*

E. moschatum (L.) *L'Hérit.* in Ait., Hort. Kew., ed. 1, 2, 414 (1789) ; Rechinger f., Fl. Aegaea, 280 (1943).

Geranium moschatum L., Sp. Pl., ed. 1, 680 (1753).

Without locality, *Platt* s.n.

E. cicutarium (L.) *L'Hérit.* in Ait., Hort. Kew., ed. 1, 2, 414 (1789) ; Rechinger f., Fl. Aegaea, 281 (1943).

Geranium cicutarium L., Sp. Pl., ed. 1, 680 (1753).

The Kámpos, February 14, 1940, *Platt* 385 ; on dry river banks, prostrate herb with pinnate leaves ; flowers purple.

[One poor specimen (*Platt* 406) is probably referable to *Erodium chium* (Burm. f.) Willd., which has its type locality on the island.]

OXALIDACEAE

Oxalis L.

O. cernua Thunb., Diss. Oxalid., 14, t. 2 (1781) ; Rechinger f., Fl. Aegaea, 274 (1943).

The Kámpos, February 27, 1940, *Platt* 405 ; cultivated land, banks, etc. ; flowers yellow.

RUTACEAE

Ruta L.

R. chalepensis L. var. **bracteosa** (DC.) Boiss., Fl. Or., 1, 922 (1867) ; Rechinger f., Fl. Aegaea, 282 (1943).

R. bracteosa DC., Prodr., 1, 710 (1824).

Haghios Constantinos, June 2, 1940, *Platt* 522 ; subshrub to 1½ ft. high ; flowers yellow.

RHAMNACEAE

Rhamnus L.

R. prunifolia Sibth. et Sm., Prodr. Fl. Graec., 1, 157 (1806) ; Rechinger f., Fl. Aegaea, 288 (1943).

Amádhēs, Pytiós area, June 5, 1939, *Platt* 595 ; shrub with green flowers.

R. alaternus L., Sp. Pl., ed. 1, 193 (1753) ; Rechinger f., Fl. Aegaea, 289 (1943).

Kardhámyla, March 6, 1940, *Platt* 415 ; dry hillside ; shrub to 3 ft. high with green flowers.

ACERACEAE

Acer *L.*

A. monspessulanum *L.*, Sp. Pl., ed. 1, 1056 (1753) ; Rechinger f., Fl. Aegaea, 287 (1943).

Amádhēs, Pytiós area, June 5, 1939, *Platt* 591 ; a tree.

A. ORIENTALE *L.*, Rechinger f., Fl. Aegaea, 287 (1943).

Without precise locality, *Orphanides*.

ANACARDIACEAE

Pistacia *L.*

P. lentiscus *L.*, Sp. Pl., ed. 1, 1026 (1753) ; Rechinger f., Fl. Aegaea, 285 (1943).

Cultivated, April 5, 1939, *Platt* 64.

The cultivated gum mastic of Chios is sometimes distinguished as *P. lentiscus* *L.* var. *chia* Duham.

P. VERA *L.* ; Rechinger f., Fl. Aegaea, 285 (1943).

Cultivated in Chios, *Rechinger* f. 5343.

P. TEREBINTHUS *L.*, is also recorded from Chios (in Rechinger f., Fl. Aegaea, 285) and *P. ATLANTICA* *Desf.* var. *LATIFOLIA* *DC.*

LEGUMINOSAE

Anagyris *L.*

A. foetida *L.*, Sp. Pl., ed. 1, 374 (1753) ; Rechinger f., Fl. Aegaea, 314 (1943).

Kampóchora, Febr. 5, 1939, *Platt* 27 ; hillsides ; shrub 3 ft. high with large greenish-yellow flowers hidden by leaves.

Lupinus *L.*

L. angustifolius *L.*, Sp. Pl., ed. 1, 721 (1753), Rechinger f., Fl. Aegaea, 377 (1943).

Kampiá, April 16–17, 1939, *Platt* 148 ; shady cultivated terrace ; annual 9 ins. high with blue flowers.

L. graecus *Boiss.*, Diagn., 1, 2, 15 (1843) ; Rechinger f., Fl. Aegaea, 378 (1943).

Kardhámyla-Mármaro, April 11, 1939, *Platt* 78 ; sunny, cultivated land (on sandstone and schist) ; annual 6 ins. high with blue flowers.

Adenocarpus *DC.*

A. complicatus (*L.*) *Gay* ex *Grenier et Godr.*, Fl. de Fr., 1, 364 (1848).

Spartium complicatum *L.*, Sp. Pl., ed. 2, 996 (1763).

Cytisus complicatus (L.) Brot., Fl. Lus., **2**, 92 (1804) ; DC., Fl. Franc., **4**, 503 (1805).

? *Cytisus parvifolius* Lam., Encycl., **2**, 248 (1786).

? *Adenocarpus parvifolius* (Lam.) DC., Fl. Franc., **6**, 550 (1815).

Cytisus divaricatus l'Herit., Consp. Stirp. Nov., 184 (1791).

Adenocarpus divaricatus (l'Herit.) Boiss., Fl. Or., **2**, 34 (1872) ; Rechinger f., Fl. Aegaea, 379 (1943).

Kampiá, May 6, 1939, *Platt* 259 ; sunny bank on schist, or amongst pines ; shrub 6-9 ins. high with yellow flowers.

The specimens, with thinly hirsute stems and glandular calyx, probably fall within the range of var. *graecus* (Griseb.), though approaching *A. complicatus* (L.) Gay ex Gren. et Godr. var. *complicatus*. I find that type and variety intergrade in many areas.

CALYCOTOME Link

C. VILLOSA (Poir.) Link ; Rechinger f., Fl. Aegaea, 379 (1943).

Collected by *Orphanides*, and seen by *Rechinger f.* on the island.

Genista L.

G. acanthoclados DC., Prodr., **2**, 146 (1825) ; Rechinger f., Fl. Aegaea, 380 (1943).

No precise locality, June 29, 1939, *Platt* 305 ; shrub 1 ft. high with yellow flowers.

Spartium L.

S. junceum L., Sp. Pl., ed. 1 (1753) ; Rechinger f., Fl. Aegaea, 382 (1943).

Kampóchora, May 6, 1939, *Platt* 205 ; general throughout island on open sunny slopes.

Ononis L.

O. pubescens L., Mantissa 2, 267 (1771) ; Rechinger f., Fl. Aegaea, 340 (1943).

The Kámpos, June 26, 1939 ; river-bed, also on cultivated ground ; herb 9 ins. high with yellow flowers. No precise locality, May 28, 1940, *Platt* 482 ; river-bed and banks ; herb 4-8 ins. high with sticky glands and yellow flowers.

O. viscosa L. ; Rechinger f., Fl. Aegaea, 340 (1943).

Collected in Chios by *Orphanides*.

O. spinosa L. var. **antiquorum** (L.) Arcang., Consp. Fl. It., 157 (1882) ; Rechinger f., Fl. Aegaea, 341 (1943).

O. antiquorum L., Sp. Pl., ed. 2, 1006 (1763).

Dry banks everywhere, May 6, 1939, *Platt* 261 ; shrub 2½ ft. high with pink flowers.

O. mitissima L., Sp. Pl., ed. 1, 717 (1753), Rechinger f., Fl. Aegaea, 343 (1943).

No precise locality, May 6, 1939, *Platt* 260 ; sunny places, herb 1 ft. high, flowers white.

Trigonella L.

T. balansae Boiss. et Reut. in Boiss., Diagn., 2, 5, 79 (1856) ; Rechinger f., Fl. Aegaea, 344 (1943).

No precise locality, May 1, 1939, *Platt* 190 ; annual 1 ft. high, with curved seed-vessels and yellow flowers ; near Viki, May 6, 1939, *Platt* 258 ; sunny banks, spreading herb to 4 ins. high with yellow flowers ; Kámpos area, June 24, 1939, *Platt* 286 ; near sea-shore, herb 3 ins. high, flowers yellow ; Kardhámyla, June 3, 1939, *Platt* 530 ; stony field and pathside ; prostrate herb 3-4 ins. high with yellow flowers.

T. SPRUNERIANA Boiss. ; Rechinger f., Fl. Aegaea, 345 (1943).

Recorded from Chios (*Aucher-Eloy* 1172).

T. GLADIATA Stev. ; Rechinger f., Fl. Aegaea, 345 (1943).

Collected in Chios by *Orphanides*.

Medicago L.

M. marina L., Sp. Pl., ed. 1, 779 (1753) ; Rechinger f., Fl. Aegaea, 348 (1943).

No precise locality, June 3, 1939, *Platt* 243 ; amongst pebbles on beach ; almost prostrate herb with yellow flowers.

M. lupulina L. var. **perennans** Hal., Consp. Fl. Graec., 1, 369 (1900) ; Rechinger f., Fl. Aegaea, 348 (1943).

Amádhes, June 4, 1939, *Platt* 555 ; on rocky ground, prostrate herb with yellow flowers.

M. ORBICULARIS (L.) All. ; Rechinger f., Fl. Aegaea, 349 (1943).

Collected in Chios by *Orphanides*.

M. SCUTELLATA (L.) Mill. ; Rechinger f., Fl. Aegaea, 349 (1943).

Near Haghios Minas, *Orphanides* Fl. Gr. 591.

M. hispida Gaertn. var. **denticulata** (Willd.) Urb., App. Ind. Hort. Berol., 3 (1872) ; Rechinger f., Fl. Aegaea, 349 (1943).

M. denticulata Willd., Sp. Pl., 3, 1414 (1803).

The Kámpos, Kampóchora, May 7, 1939, *Platt* 210 ; dry places, and side of river-bed ; herb 9 ins. high with yellow flowers. The Kámpos, May 20, 1940 ; *Platt* 454 ; on dry banks, small prostrate herb with spiny fruits and yellow flowers.

M. HISPIDA Gaertn. var. **LAPPACEA** (Desr.) Hal. ; Rechinger f., Fl. Aegaea, 350 (1943).

Collected in Chios by *Orphanides*.

M. TUBERCULATA Willd. ; Rechinger f., Fl. Aegaea, 353 (1943).

Collected in Chios by *Orphanides*.

Melilotus Mill.

M. ITALICUS (L.) Lam. ; Rechinger f., Fl. Aegaea, 354 (1943).

Above Nea [Moni], *Orphanides*, Fl. Gr. 576.

M. neapolitanus Ten., Fl. Nap. Prodr., suppl. 1, 62 (? 1811) ; Rechinger f., Fl. Aegaea, 354 (1943).

No precise locality, *Platt* s.n.

M. indicus (L.) All., Fl. Ped., 1, 308 (1785) ; Rechinger f., Fl. Aegaea, 354 (1943).

Trifolium melilotus indica L., Sp. Pl., ed. 1, 765 (1753).

Kampóchora, May 7, 1939, *Platt* 209 ; dry places, and side of river-bed (with *Medicago hispida* var. *denticulata* No. 210 *supra*), herb 1 ft. high, flowers yellow.

Trifolium L.

T. campestre Schreb. in Sturm., Deutschl. Fl., 16, t. 13 (1804) ; Rechinger f., Fl. Aegaea, 358 (1943).

Kámpos, June 26, 1939, *Platt* 289 ; dry sunny banks ; prostrate herb with yellow flowers.

T. CAMPESTRE Schreb. var. **SUBSESSILE** (Boiss.) Hay. ; Rechinger f., Fl. Aegaea, 359 (1943).

Recorded from Chios by *Orphanides*.

T. speciosum Willd., Sp. Pl., 3, 1382 (1803) ; Rechinger f., Fl. Aegaea, 359 (1943).

Kampiá, April 16-17, 1939, *Platt* 143 ; dry slopes ; annual 2 ins. high with purple flowers.

T. meneghinianum Clem., Sert. Or., 31, t. VII f. 1 (1855) ; Rechinger f., Fl. Aegaea, 360 (1943).

The Kámpos, May 26, 1940, *Platt* 460 ; cultivated land ; herb 6 ins. high with white flowers.

T. uniflorum L., Sp. Pl., ed. 1, 771 (1753) ; Rechinger f., Fl. Aegaea, 361 (1943).

Amádhēs, Kalkiós, April 2, 1939, *Platt* 59 ; dwarf perennial herb with white or pink flowers.

T. UNIFLORUM L. var. **MACRODON** Hausskn. ; Rechinger f., Fl. Aegaea, 362 (1943).

Recorded from Chios by *Pauli*.

T. resupinatum L., Sp. Pl., ed. 1, 771 (1753) ; Rechinger f., Fl. Aegaea, 363 (1943).

Without locality, June 26, 1939, *Platt* 293. The Kámpos, May 20, 1940, *Platt* 446 ; on dry banks ; prostrate herb with pale pink flowers.

T. tomentosum L., Sp. Pl., ed. 1, 771 (1753) ; Rechinger f., Fl. Aegaea, 363 (1943).

Kardhámyla, April 11–13, 1939, *Platt* 83 ; on sunny, stony slopes, herb with pink flowers and round woolly seed-heads.

T. glanduliferum Boiss., Diagn., 1, 2, 30 (1843).

Spartoúnta, below village, April 18–19, 1939, *Platt* 166 ; uncultivated dry ground ; herb 4 ins. high with white and pinkish flowers.

An addition to the Aegean flora ; *T. glanduliferum* is plentiful on the adjacent mainland.

T. bocconeii Savi, Obs. Trif., 37 (1810) ; Rechinger f., Fl. Aegaea, 364 (1943).

Kámpia, May 6, 1939, *Platt* 269 ; in sun near pine trees ; annual, 2 ins. high with pink flowers.

T. scabrum L., Sp. Pl., ed. 1, 770 (1753) ; Rechinger f., Fl. Aegaea, 364 (1943).

Amádhēs, June 4, 1939, *Platt* 549 ; herb with pinkish flowers.

T. clypeatum L., Sp. Pl., ed. 1, 769 (1753) ; Rechinger f., Fl. Aegaea, 365 (1943).

The Kámpos, March 24, 1939, *Platt* 10 ; on ditches and sunny banks amongst grass ; prostrate herb 3–6 ins. high with a large pale-pink inflorescence.

T. arvense L., Sp. Pl., ed. 1, 769 (1753) ; Rechinger f., Fl. Aegaea, 365 (1943).

Kardhámyla–Mármaro, alt. 50 m., April 11, 1939, *Platt* 77 ; cultivated land (on sandstone and schist) in sun ; annual 5 ins. high, flowers pinkish white. Kampiá, May 6, 1939, *Platt* 268 ; in sun near pine trees ; annual 2 ins. high with pink-mauve flowers.

T. preslianum Boiss., Diagn., 1, 2, 25 (1843) ; Rechinger f., Fl. Aegaea, 366 (1943).

Kardhámyla area, June 3, 1939, *Platt* 544 ; rocks above Nagos ; annual 2–3 ins. high with white flowers.

T. stellatum L., Sp. Pl., ed. 1, 769 (1753) ; Rechinger f., Fl. Aegaea, 366 (1943).

Kampóchora, April 9, 1939, *Platt* 73 ; stony places in sun, annual 3 ins. high with pink flowers.

T. angustifolium L., Sp. Pl., ed. 1, 769 (1753) ; Rechinger f., Fl. Aegaea, 366 (1943).



FIG. 5. *Trifolium glanduliferum* Boiss. Plant, natural size. Leaf and stipule $\times 2$. Flower $\times 3$. Standard, wing and keel $\times 3$. Calyx $\times 6$. Androecium and gynoeceum $\times 6$.

Below Kallimasiá, May 1, 1939, *Platt* 187 ; pathside, annual 3–6 ins. high with pink flowers.

T. purpureum *Loisl.*, *Fl. Gallica*, ed. 1, **2**, 484 (1807) ; Rechinger f., *Fl. Aegaea*, 367 (1943).

On way to Pytiós, May 6, 1939, *Platt* 255 ; cultivated ground ; herb 6 ins–2 ft. high with pink flowers.

T. lappaceum *L.* var. **rhodense** (*Pamp.*) *Rechinger f.*, *Fl. Aegaea*, 368 (1943) *e descr.*

T. rhodense *Pamp.* in *Bull. Soc. Bot. It.*, **1925**, 142 (1925).

Pathside above Zyfiá, May 30, 1940, *Platt* 505 ; prostrate herb with white flowers.

Authentic material of var. *rhodense* is not available for comparison, but, from description, the Chios specimens can be referred here with reasonable confidence. The dense indumentum and short calyx teeth give the plant a distinctive appearance, quite unlike typical *T. lappaceum*, but on closer inspection, one is obliged to agree with Rechinger f. in giving *rhodense* varietal rank, though it is certainly a very well-marked variety.

Anthyllis L.

A. hermanniae *L.*, *Sp. Pl.*, ed. 1, 720 (1753) ; Rechinger f., *Fl. Aegaea*, 375 (1943).

Haghios Constantinos, May 27, 1940, *Platt* 471 ; on slopes and banks etc., subshrub 6 ins.–2 ft. high with yellow flowers.

A. vulneraria *L.* var. **spruneri** *Boiss.*, *Fl. Or.*, **2**, 158 (1872).

A. spruneri (*Boiss.*) Beck in *Ann. Nat. Hofm.*, **11**, 62 (1896) ; Rechinger f., *Fl. Aegaea*, 375 (1943).

Amádhes, April 14–15, 1939, *Platt* 134 ; just above beach ; shrubby plant 1 ft. high with pink flowers. Amádhes, Pytiós area, June 5, 1939, *Platt* 581 ; rocky ground ; prostrate herb with pink flowers.

Physanthyllis Boiss.

P. tetraphylla (*L.*) *Boiss.*, *Voy. Bot. Esp.*, **2**, 162 (1839) ; Rechinger f., *Fl. Aegaea*, 376 (1943).

Anthyllis tetraphylla *L.*, *Sp. Pl.*, ed. 1, 719 (1753).

Kardhámyla, April 11–13, 1939, *Platt* 111 ; on sunny banks ; herb 2 ins. high with inflated calyx and yellow corolla.

Hymenocarpus Savi

H. circinnatus (*L.*) *Savi*, *Fl. Pis.*, **2**, 205 (1798) ; Rechinger f., *Fl. Aegaea*, 374 (1943).

Medicago circinnata *L.*, *Sp. Pl.*, ed. 1, 778 (1753).

The Kámpos, May 20, 1940, *Platt* 452 ; on dry rough ground ; semi-prostrate herb with deep yellow flowers and a round fruit.

Securigera DC.

S. securidaca (L.) Deg. et Dörf., in Denk.Math. Kl. Akad. Wiss. Wien, **64**, 718 (1897) ; Rechinger f., Fl. Aegaea, 374 (1943).

Coronilla securidaca L., Sp. Pl., ed. 1, 743 (1753).

The Kámpos, May 20, 1940, *Platt* 455 ; on dry banks ; herb 6–9 ins. high with yellow capitate inflorescences and long fruits.

Dorycnium Vill.

D. hirsutum (L.) Sér. ap. DC., Prodr., **2**, 208 (1825) ; Rechinger f., Fl. Aegaea, 369 (1943).

Lotus hirsutus L., Sp. Pl., ed. 1, 775 (1753).

No precise locality, April 11–13, 1939, *Platt* 114 ; open sunny slope ; shrub with pink flowers. Nea Moní, May 4, 1939, *Platt* 199 ; amongst pine-trees, shrub with pinkish-white flowers.

D. HIRSUTUM (L.) Sér. var. **HIRTUM** (Jord. et Fourr.) Rikli ; Rechinger f., Fl. Aegaea, 369 (1943).

Hill west of the town, *Rechinger f.* 5309.

Lotus L.

L. ornithopodioides L., Sp. Pl., ed. 1, 775 (1753) ; Rechinger f., Fl. Aegaea, 371 (1943).

Without locality, *Platt* s.n.

L. creticus L. var. **cytisoides** (L.) Boiss., Fl. Or., **2**, 165 (1872).

L. cytisoides L., Sp. Pl., ed. 1, 776 (1753) *pro parte*.

L. creticus L. ssp. *cytisoides* (L.) Asch. & Graebn., Syn. Mitt.-Eur. Fl., **6**, 2, 672 (1908) ; Rechinger f., Fl. Aegaea, 371 (1943).

No precise locality, June 3, 1939, *Platt* 242 ; above beach ; prostrate herb with yellow flowers.

L. coimbrensis Brot. in Willd., Sp. Pl., **3**, 1390 (1803) ; Rechinger f., Fl. Aegaea, 372 (1943).

Kampiá, April 16–17, 1939, *Platt* 138 ; sunny slope below village ; herb 2 ins. high with pink and white flowers.

L. corniculatus L., Sp. Pl., ed. 1, 775 (1753) *sens. lat.* ; Rechinger f., Fl. Aegaea, 372 (1943).

Kardhámyla, June 3, 1939, *Platt* 341 ; *Platt* 341 ; dry stony fields ; flowers yellow.

A very stout form of this species, simulating *L. uliginosus* Schk. but with solid stems and rather sparse inflorescences. It matches with a Sicilian specimen (without data) in herb. Kew., and is perhaps the *Lotus pedunculatus* of Cavanilles. So many infraspecific segregates of *L. corniculatus* have been described, and upon such unsatisfactory characters, that it is probably wiser to leave this particular variant unnamed, until the aggregate species has been systematically analyzed.

L. edulis L., Sp. Pl., ed. 1, 774 (1753) ; Rechinger f., Fl. Aegaea, 373 (1943).

The Kámpos, May 20, 1940, *Platt* 449 ; prostrate herb with orange flowers and curved "pea-pod" fruit. Haghiós Constantinos, May 27, 1940, *Platt* 465 ; edge of cultivated ground and roadside ; prostrate or trailing herb with yellow flowers and pea-like fruits.

L. tetragonolobus L., Sp. Pl., ed. 1, 773 (1753) ; Rechinger f., Fl. Aegaea, 374 (1943).

The Kámpos, April 9, 1939, *Platt* 70 ; edges of fields, prostrate herb with red flowers.

Psoralea L.

P. bituminosa L. var. **plumosa** (Reichb.) Reichb. f., Icones Fl. Germ., 22, 91 (1903) ; Rechinger f., Fl. Aegaea ; 321 (1943).

P. plumosa Reichb., Fl. Germ. Excurs., 869 (1832).

Without precise locality, June 1, 1939, *Platt* 234 ; on sunny, stony ground throughout the island ; herb 1½ ft. high with purple flowers. Without locality, June 27, 1939, *Platt* 304.

Colutea L.

C. arborescens L., Sp. Pl., ed. 1, 723 (1753) p.p. excl. β ; Rechinger f., Fl. Aegaea, 314 (1943).

Sklaviá, May 29, 1940, *Platt* 495 ; edge of road ; shrub 3 ft. high with yellow flowers.

Astragalus L.

A. PENTAGLOTTIS L. ; Rechinger f., Fl. Aegaea, 317 (1943).

Recorded by *Aucher-Eloy*.

A. SINAICUS Boiss. ; Rechinger f., Fl. Aegaea, 317 (1943).

Recorded for Chios, *Aucher-Eloy* 1310.

A. TROJANUS Stev. var. **CHIUS** (Boiss. et Orph.) Sirj. ; Rechinger f., Fl. Aegaea 319 (1943).

On limestone crags in the valley west of Livadi, 500 m., *Rechinger f.* 5291 (also recorded by *Orphanides* 598, *Sterneck* and *Reese*).

A. ptilodes Boiss. var. **cariensis** Boiss., Fl. Or., 2, 364 (1872) ; Rechinger f., Fl. Aegaea, 319 (1943).

Rocks and slopes of Pelinaión, July 8, 1939, *Platt* 326 ; shrub 6 ins. high with purple flowers.

A. angustifolius Lam., Encycl., 1, 321 (1783) ; Rechinger f., Fl. Aegaea, 328 (1943).

Amádhēs, Pytiós area, June 5, 1939, *Platt* 580 ; rocky ground, shrub 3-6 ins. high with white flowers.

Scorpiurus L.

S. subvillosa L., Sp. Pl., ed. 1, 745 (1753) ; Rechinger f., Fl. Aegaea 386 (1943).

The Kámpos, May 20, 1940, *Platt* 453 ; dry rough ground ; semi-prostrate herb with orange-yellow flowers.

Ornithopus L.

O. compressus L., Sp. Pl., ed. 1, 744 (1753) ; Rechinger f., Fl. Aegaea, 383 (1943).

Without locality, *Platt* ? 152.

Hippocrepis L.

H. unisiliquosa L., Sp. Pl., ed. 1, 744 (1753) ; Rechinger f., Fl. Aegaea, 386 (1943).

The Kámpos, March 24–28, 1939, *Platt* 21 ; dry banks ; dwarf herb with small yellow inconspicuous flowers.

Coronilla L.

C. emeroides Boiss. et Sprun. in Boiss., Diagn., 1, 2, 100 (1843) ; Rechinger f., Fl. Aegaea, 383 (1943).

Kampiá, April 16–17, 1939, *Platt* 157 ; rocks amongst *Quercus coccifera*, herb 2–3 ft. high with yellow flowers. Amádhēs, June 4, 1939, *Platt* 571 ; shrub with yellow flowers.

C. cretica L., Sp. Pl., ed. 1, 743 (1753) ; Rechinger f., Fl. Aegaea, 384 (1943).

Sklaviá, May 29, *Platt* 493 ; roadside ; trailing herb with pink flowers.

C. parviflora Willd., Sp. Pl., 3, 1155 (1803) ; Rechinger f., Fl. Aegaea, 384 (1943).

Nea Moní, May 4, 1939, *Platt* 203 ; under pine trees ; herb 4 ins. high with yellow flowers.

C. scorpioides (L.) Koch, Syn., 188 (1835) ; Rechinger f., Fl. Aegaea, 385 (1943).

Ornithopus scorpioides L., Sp. Pl., ed. 1, 744 (1753).

The Kámpos, May 20, 1940, *Platt* 451 ; on dry rough ground ; small herb 4 ins. high with yellow flowers and sickle-shaped fruits.

Onobrychis Hill

O. cana (Boiss.) Hand.-Mazz. in Ost. Bot. Zeitschr., 59, 481 (1909) ; Rechinger f., Fl. Aegaea, 389 (1943).

O. lasiostachya Boiss. var. β *cana* Boiss., Fl. Or., 2, 535 (1872).

Without precise locality, May 28, 1940, *Platt* 481 ; on dry banks ; herb with prostrate branches and pink flowers.

O. LASIOSTACHYA Boiss. ; Rechinger f., Fl. Aegaea, 389 (1943).

Recorded from Chios, *Aucher-Eloy* 3831.

O. aequidentata (Sibth. et Sm.) Urv., Enum., 90 (1822) ; Rechinger f., Fl. Aegaea, 389 (1943).

Hedysarum aequidentatum Sibth. et Sm., Fl. Graec. Prodr., 2, 84 (1813).

Zyfiá, May 30, 1940, *Platt* 506 ; on sunny banks ; herb 6 ins. high with distant, pink flowers.

O. caput-galli (L.) Lam., Fl. Fr., 2, 652 (1795) ; Rechinger f., Fl. Aegaea, 390 (1943).

Hedysarum caput-galli L., Sp. Pl., ed. 1 (1753).

Haghios Constantinos, May 17, 1940, *Platt* 466 ; cultivated ground ; prostrate or trailing herb with mauve flowers and round prickly fruit.

Vicia L.

V. lutea L. var. **hirta** (Balb.) Loisl., Fl. Gallica, ed. 1, 2, 462 (1807) ; Rechinger f., Fl. Aegaea, 325 (1943).

V. hirta Balb. ex Pers., Syn., 2, 308 (1807).

The Kámpos, May 31, 1940 ; *Platt* 513 ; cultivated land ; trailing herb with white flowers.

V. melanops, Sibth. et Sm., Fl. Graec. Prodr., 2, 72 (1813) ; Rechinger f., Fl. Aegaea, 325 (1943).

Kampiá, April 16-17, 1939, *Platt* 145 ; under pines below village, flowers yellow with bronze keel.

V. peregrina L., Sp. Pl., ed. 1, 737 (1753) ; Rechinger f., Fl. Aegaea, 325 (1943).

The Kámpos, March 24-28, 1939, *Platt* 19 ; cornfields ; herb 9 ins. high with smoky-blue flowers. Without precise locality, June 27, 1939, *Platt* 302 ; herb with purple, solitary flowers.

V. SATIVA L. ; Rechinger f., Fl. Aegaea, 326 (1943).

Recorded from Chios by *Orphanides*.

V. hybrida L., Sp. Pl., ed. 1, 737 (1753) ; Rechinger f., Fl. Aegaea, 327 (1943).

The Kámpos etc., April 9, 1939, *Platt* 68 ; edges of fields amongst grass and in cultivated areas, prostrate herb with yellow flowers.

V. cuspidata Boiss., Diagn., 1, 2, 104 (1843) ; Rechinger f., Fl. Aegaea, 328 (1943).

Kampiá, April 16-17, 1939, *Platt* 136 ; flat sunny slope below village ; herb 3 ins. high with pale mauve flowers.

V. tenuifolia Roth. var. **elegans** (Guss.) Arcang., Comp. Fl. Ital., ed. 2, 527 (1894) ; Rechinger f., Fl. Aegaea, 328 (1943).

V. elegans Guss., Fl. Sic. Prodr., 2, 438 (1828).

No precise locality, June 27, 1939, *Platt* 301 ; cultivated ground and cornfields ; climbing herb with purple flowers.

V. DASYCARPA Ten. ; Rechinger f., Fl. Aegaea, 329 (1943).

Recorded from Chios by *Pauli*.

V. eriocarpa (Hausskn.) Hal., Consp. Fl. Graec., 1, 489 (1900) ; Rechinger f., Fl. Aegaea, 329 (1943).

V. varia Host var. *eriocarpa* Hausskn. in Mitt. Thur. Bot. Ver., pt. 5, 87 (1893).

The Kámpos, May 20, 1940, *Platt* 444 ; climbing or prostrate herb with purple flowers.

V. MICROCARPA Ur. ; Rechinger f., Fl. Aegaea, 329 (1943).

Recorded from Chios, *Aucher-Eloy* 965.

V. tenuissima (M. Bieb.) Schinz et Thell. in Viert. Nat. Gesellsch. Zur., 58, 70 (1913) ; Rechinger f., Fl. Aegaea, 331 (1943).

Ervum tenuissimum M. Bieb., Tabl. Prov. Casp., 185, app. n. 55 (1798).

Side of road to Sklaviá, May 29, 1940, *Platt* 491 ; herb with mauve flowers.

Ervum L.

E. orientale Boiss., Diagn., 1, 9, 115 (1849).

Kampiá, April 16-17, 1939, *Platt* 137.

An addition to the Flora Aegaea.

Lathyrus L.

L. aphaca L., Sp. Pl., ed. 1, 729 (1753) ; Rechinger f., Fl. Aegaea, 334 (1943).

Without locality, May 28, 1940, *Platt* 481 A.

L. clymenum L., Sp. Pl., ed. 1, 732 (1753) ; Rechinger f., Fl. Aegaea, 334 (1943).

Kardhámyla-Mármaro, April 12, 1939, *Platt* 81 ; stony, sunny ground ; herb with purple, crimson or white flowers, generally growing through *Poterium spinosum* L.

L. chius Boiss. et Orph. in Boiss., Diagn., 2, 6, 68 (1859) ; Bornmüller in Mitt. Thur. Bot. Vereins, 24, 49 (1908).

L. hierosolymitanus Boiss. var. *grandiflorus* Boiss., Fl. Or., 2, 604 (1872) ; Rechinger f., Fl. Aegaea, 336 (1943).

Road to Sklaviá, May 29, 1940, *Platt* 488 ; cornfields, climbing herb with red flowers.



FIG. 6. *Lathyrus chius* Boiss. et Orph. Plant, natural size. Pod, natural size. Seed $\times 2$.
Floral analysis $\times 3$.

I follow Bornmüller in giving this plant specific rank ; *L. chius* differs widely from *L. hierosolymitanus* in size and shape of pod, and in the sculpturing of the seeds, which resembles much more closely the sculpturing found in *L. annuus* L. The latter plant is however distinguished by its yellow flowers, and by its smaller stature and more slender habit. *L. chius* is superficially very similar to *L. sylvestris* L., but has 2-4-flowered racemes (many-flowered in *L. sylvestris*) and densely papillose-rugulose seeds.

L. sphaericus Retz., Obs., **3**, 39 (1783) ; Rechinger f., Fl. Aegaea, 336 (1943).

Kampiá, April 16-17, 1939, *Platt* 142 ; dry slopes near pines, herb 4 ins. high with scarlet flowers.

L. SETIFOLIUS L. ; Rechinger f., Fl. Aegaea, 336 (1943).

Hill west of the town, *Rechinger* f. 5276.

L. inermis Roch. ap. Friv., Magy. Tud. Tars. Erk., **2**, 250 (1835) ; Rechinger f., Fl. Aegaea, 336 (1943).

Amádhēs, June 4, 1939, *Platt* 554 ; rocky ground, climbing herb with mauve and lavender flowers.

L. sessilifolius (Sibth. et Sm.) Ten., Fl. Nap. Prodr., app. **5**, 21 (1826) ; Rechinger f., Fl. Aegaea, 337 (1943).

Orobis sessilifolius Sibth. et Sm., Fl. Graec. Prodr., **2**, 64 (1813).

Spartoúnta, April 18-19, 1939, *Platt* 158 ; sunny hillside amongst stones, herb 3-4 ins. high.

Ceratonia L.

C. siliqua L., Sp. Pl., ed. 1, 1026 (1753) ; Rechinger f., Fl. Aegaea, 314 (1843).

Without locality, *Platt* s.n.

ROSACEAE

Prunus L.

P. SPINOSA L. ; Rechinger f., Fl. Aegaea, 312 (1943).

Recorded from Chios by *Orphanides*.

P. prostrata La Bill., Icones Pl. Syr. Rar., **1**, 15 (1791) ; Rechinger f., Fl. Aegaea, 313 (1943).

Amádhēs, Pytiós area, June 5, *Platt* 594.

Rubus L.

R. ulmifolius Schott, Isis, 821 (1818) ; Rechinger f., Fl. Aegaea, 299 (1943).

General throughout area, July 11, 1939, *Platt* 344 ; rambling shrub 4 ft. high with pink flowers.

Poterium L.

P. spinosum L., Sp. Pl., ed. 1, 994 (1753) ; Rechinger f., Fl. Aegaea, 304 (1943).

Everywhere from sea level to 1,000 m., 5 April, 1939, *Platt* 62.

? **P. verrucosum** Ehrenb., Ind. Sem. Hort. Berol. (1829).

Sanguisorba verrucosa (Ehrenb.) A. Braun, Ind. Sem. Hort. Berol. (1867) ; Rechinger f., Fl. Aegaea, 304 (1943).

Amádhēs, June 4, 1939, *Platt* 547 ; rough ground ; herb 6 ins. high with a round pink inflorescence.

The specimens are too meagre and immature for precise determination.

Rosa L.

R. sempervirens L., Sp. Pl., ed. 1, 492 (1753) ; Rechinger f., Fl. Aegaea, 305 (1943).

Kampiá, June 2, 1939, *Platt* 239 ; climber to 15 ft., flowers white or occasionally flushed pink.

R. DUMETORUM Thuill. ; Rechinger f., Fl. Aegaea, 306 (1943).

Without precise locality, *Orphanides* 3735.

R. HORRIDA F. Fischer ; Rechinger f., Fl. Aegaea, 306 (1943).

Mt. Plaka above Karyés, *Rechinger* f. 5383.

R. glutinosa Sibth. et Sm., Fl. Graec. Prodr., **1**, 348 (1806) ; Rechinger f., Fl. Aegaea, 307 (1943).

Without precise locality, May 28, 1939, *Platt* 219 ; very dwarf amongst stones, bushier in moister places, 6 ins. to 2 ft. high, flowers white or pink.

PYRUS L.

P. AMYGDALIFORMIS Vill. ; Rechinger f., Fl. Aegaea, 309 (1943).

Mt. Plaka (seen by Rechinger f.).

Crataegus L.

C. monogyna Jacq., Fl. Austr., **3**, 5, t. 292, f. 1 (1775) ; Rechinger f., Fl. Aegaea, 311 (1943).

The Kámpo, Amádhēs, April 1939, *Platt* 167 ; shrub 6 to 15 ft. high with white flowers.

C. monogyna Jacq. f. **laciniata** K. Koch, Dendrologie, **1**, 160 (1869).

C. monogyna Jacq. var. *laciniata* Dippel, Handb. Laubh., **3**, 459 (1893) ; Hayek, Prodr. Fl. Pen. Balc., **1**, 755 (1926).

C. laciniata Stev. in Besser, Enum. Pl. Volh., 58 (1822).

No locality or date, *Platt* s.n.

Cotoneaster Med.

C. racemiflora (Desf.) K. Koch, *Dendrologie*, **1**, 170 (1869).

Mespilus racemiflora Desf., *Cat. Hort. Reg. Par.*, ed. 3, 409 (1829).

Cotoneaster nummularia Fisch. et Mey., *Ind. Sem. Hort. Petrop.*, **2**, 34 (1835) ; Rechinger f., *Fl. Aegaea*, 310 (1943).

Amádhēs, Pelinaíon, April 5, 1940 ; *Platt* 593.

SAXIFRAGACEAE

Saxifraga L.

S. hederacea L., *Sp. Pl.*, ed. 1, 405 (1753) ; Rechinger f., *Fl. Aegaea*, 297 (1943).

No locality or date, *Platt* s.n.

S. granulata L., *Sp. Pl.*, ed. 1, 403 (1753).

Kampiá, April 16–17, 1939, *Platt* 147 ; moist shady bank below village ; herb 6 ins. high with white flowers.

The specimens differ from British and W. European material only in having slightly more pubescent leaves. The characters given in literature to distinguish *S. graeca* Boiss. et Heldr. from *S. granulata* (stouter unbranched stems, $\pm$ condensed inflorescence and short ovate calyxlobes) are all variable, and while the condensed inflorescence is a marked feature in specimens from S.E. Europe the same variation is not infrequently exhibited by *S. granulata* from areas further North and West. Engler seems justified in regarding *S. graeca* as a variety of *granulata*.

GRASSULACEAE

COTYLEDON L.

C. serratus L., Rechinger f., *Fl. Aegaea* ; 296 (1943).

Cliffs in valley west of Livadi, 500 m. alt., *Rechinger* f. 5306a, also collected in Chios by *Orphanides*.

Sedum L.

S. altissimum Lam., *Encycl.*, **4**, 634 (1796) ; Rechinger f., *Fl. Aegaea*, 292 (1943).

Haghios Geórgios Sykoúsis, June 30, 1939, *Platt* 308 ; on rocks and in stony places ; herb 2 ft. high with creamy-white flowers.

S. glaucum W. et K. var. **bithynicum** (Boiss.) Boiss., *Fl. Or.*, **2**, 789 (1872) ; Rechinger f., *Fl. Aegaea*, 294 (1943).

S. bithynicum Boiss., *Diagn.*, **1**, **10**, 17 (1849).

Pelinaíon, May 28, 1939, *Platt* 222.

Fine lush specimens, differing constantly from typical *S. glaucum* in the perennating habit, sterile basal shoots and stems much divided at the base.

MYRTACEAE

Myrtus L.

M. communis L., Sp. Pl., ed. 1, 471 (1753) ; Rechinger f., Fl. Aegaea 394 (1943).

Throughout island ; never more than 5 ft. high ; June 3, 1939, *Platt* 241.

PUNICACEAE

Punica L.

P. granatum L., Sp. Pl., ed. 1, 492 (1753) ; Rechinger f., Fl. Aegaea, 395 (1943).

Without locality, probably cultivated, June 25, 1939, *Platt* 287.

LYTHRACEAE

Lythrum L.

L. junceum Banks in Russell, Nat. Hist. Aleppo, ed. 2, 2, 253 (1794) ; Gonzalez-Albo in Cavanillesia, 8, 142 (1938).

L. acutangulum auct. non Lag., Gen. et Sp. Nov., 16 (1816).

L. flexuosum auct. non Lag., Gen. et Sp. Nov., 16 (1816) ; Rechinger f., Fl. Aegaea, 394 (1943).

L. graefferi Ten., Prodr. Fl. Nap., suppl. 2, LXVIII (1811-15).

Kardhâmyla, June 3, 1939, *Platt* 527 ; ditches and low-lying ground ; herb 9 ins. to 2 ft., flowers purple.

L. hyssopifolia L., Sp. Pl., ed. 1, 447 (1753) ; Rechinger f. Fl. Aegaea, 394 (1943).

Kampiá, May 6, 1939, *Platt* 270 ; moist peaty soil ; perennial herb, prostrate, with mauve flowers. Road to Sklaviá, May 29, 1940 ; *Platt* 487 ; in ditches, herb 6-9 ins. high with purple flowers.

ONAGRACEAE

Epilobium L.

E. adnatum Griseb. in Bot. Zeit., 10, 851 (1852) ; Rechinger f., Fl. Aegaea, 396 (1943).

E. tetragonum L., Sp. Pl., ed. 1, 348 (1753) *pro parte*.

Sklaviá, May 29, 1949, *Platt* 494 ; edges of fields and ditches ; herb 3 ft. high, flowers pink. Kardhâmyla, June 3, 1939, *Platt* 526 ; ditches and low-lying ground ; herb 1½ to 2 ft. high, flowers pale pink.

CUCURBITACEAE

Ecballium Rich.

E. elaterium (L.) Rich. in Dict. Class. Syst. 6, 19 (1824) ; Rechinger f., Fl. Aegaea, 259 (1943).

Momordica elaterium L., Sp. Pl., ed. 1, 1010 (1753).

No precise locality, April 24, 1939, *Platt* 177 ; side of road and dry ditches ; perennial herb 1 ft. high with yellow flowers.

UMBELLIFERAE

Eryngium L.

E. maritimum L., Sp. Pl., ed. 1, 233 (1753) ; Rechinger f., Fl. Aegaea, 398 (1943).

Seashores, generally distributed, July 19, 1939, *Platt* 315 ; herb 2 ft. high with mauve flowers.

Lagoecia L.

L. cuminoides L., Sp. Pl., ed. 1, 203 (1753) ; Rechinger f., Fl. Aegaea, 400 (1943).

Haghios Constantinos, May 27, 1940, *Platt* 476 ; road and pathside, cultivated ground ; annual 6–9 ins. high with greeny-white flowers.

Echinophora L.

E. tenuifolia L., Sp. Pl., ed. 1, 239 (1753) ; Rechinger f., Fl. Aegaea 426 (1943).

Terraces below Neachóri, Sept. 26, 1939, *Platt* 613 ; herb 4–6 ins. high with yellow flowers.

The notes accompanying this species are misleading, since the majority of the specimens are more than 6 ins. high, though it is possible that very vigorous examples were alone selected from a population of smaller plants.

Smyrniurn L.

S. olusatrum L., Sp. Pl., ed. 1, 262 (1753) ; Rechinger f., Fl. Aegaea, 424 (1943).

The Kámpos, March 13, 1939, *Platt* 427 ; cultivated ground ; herb 3–4 ft. high with white (*sic*) flowers.

S. orphanidis Boiss., Fl. Or. **2**, 926 (1872) ; Rechinger f., Fl. Aegaea, 424 (1943).

Amádhēs, June 4, 1939, *Platt* 556 ; near stream ; herb 3 ft. high with greenish-yellow flowers.

S. ROTUNDIFOLIUM Mill. ; Rechinger f., Fl. Aegaea, 425 (1943).

Recorded from Chios by *Orphanides*.

Bupleurum L.

B. trichopodium Boiss. et Spr. in Ann. Sc. Nat., **3**, 1, 145 (1844) ; Rechinger f., Fl. Aegaea, 401 (1943).

Without data, *Platt* s.n.

B. FLAVUM Forsk. ; Rechinger f., Fl. Aegaea, 402 (1943).

Hill west of the town, *Rechinger f.* 5302 ; also collected by *Aucher-Eloy*.

B. lancifolium Hornem., Hort. Hafn., **1**, 267 (1813), Rechinger f., Fl. Aegaea, 402 (1943).

B. subovatum Link in Spreng., Sp. Umb., 19 (1818).

Without data, *Platt* s.n.

Apium L.

A. nodiflorum (L.) *Reichb.*, *Icones Fl. Germ.*, **21**, 10, t. 15 (1867) ;
Rechinger f., *Fl. Aegaea*, 403 (1943).

Sium nodiflorum L., *Sp. Pl.*, ed. 1, 251 (1753).

Kardhámyla, June 3, 1939, *Platt* 533 ; in running water, herb 2-9 ins.
high with white flowers.

Ammi L.

A. majus L., *Sp. Pl.*, ed. 1, 243 (1753), Rechinger f., *Fl. Aegaea*, 404
(1943).

Cultivated ground generally, June 17, 1939, *Platt* 300 ; herb 1½ ft. high
with white flowers.

A. visnaga (L.) *Lam.*, *Fl. Fr.*, **3**, 462 (1778) ; Rechinger f., *Fl. Aegaea*,
404 (1943).

Daucus visnaga L., *Sp. Pl.*, ed. 1, 242 (1753).

Kondári, inland, July 18, 1939, *Platt* 320 ; herb 1-1½ ft. high with
white flowers.

Ridolfia Mor.

R. segetum (L.) *Mor.*, *Enum. Sem. Reg. Hort. Bot. Taur.*, 53 (1841) ;
Rechinger f., *Fl. Aegaea*, 403 (1943).

Anethum segetum L., *Mantissa Altera*, 219 (1771).

Cultivated ground in general, June 27, 1939, *Platt* 297 ; herb 2½ ft.
high, flowers yellow.

The specimens are all without fruits, and extraordinarily difficult to
distinguish, in this condition, from *Anethum graveolens* L. and forms of
Foeniculum vulgare Mill.

Bunium L.

B. ferulaceum *Sibth. et Sm.*, *Fl. Graec. Prodr.*, **1**, 186 (1806) ; Rechinger
f., *Fl. Aegaea*, 405 (1943).

No precise locality, April 29, 1939, *Platt* 180 ; on dry banks ; herb
9-12 ins. high with tuberous root, flowers white.

MICROSCIADIUM Boiss.

M. MINUTUM (Urv.) *Briq.* ; Rechinger f., *Fl. Aegaea*, 404 (1943).

Valley of Livadi, about 500 m., *Rechinger f.* 1953 ; also recorded by
Aucher-Eloy.

Pimpinella L.

P. ANISUM L. ; Rechinger f., *Fl. Aegaea*, 407 (1943).

Recorded from Chios by *de Candolle*.

P. cretica *Poir.*, *Encycl. Suppl.*, **1**, 684 (1810) ; Rechinger f., *Fl. Aegaea*,
407 (1943).

Haghios Constantinos, May 27, 1940, *Platt* 473 ; pathside, herb 9-
15 ins. high with white flowers.

SCALIGERIA DC.

- S. CRETICA** (*Urv.*) *Vis.* ; Rechinger f., *Fl. Aegaea*, 423 (1943).
Mt. Plaka, 600 m., *Rechinger f.* ; also recorded by *Orphanides*.

Scandix *L.*

- S. pecten-veneris** *L.*, *Sp. Pl.*, ed. 1, 256 (1753) ; Rechinger f., *Fl. Aegaea*, 422 (1943).
The Kámpos, March 25, 1939, *Platt* 13 ; annual herb 2–6 ins. high with finely divided foliage, flowers white.

Foeniculum *Hill*

- F. piperitum** *DC.*, *Prodr.*, 4, 142 (1830) ; Rechinger f., *Fl. Aegaea*, 409 (1943).
Without locality or data, *Platt* s.n.

Oenanthe *L.*

- O. pimpinelloides** *L.*, *Sp. Pl.*, ed. 1, 255 (1753) ; Rechinger f., *Fl. Aegaea*, 409 (1943).
Near Kampiá, May 6, 1939, *Platt* 266 ; on a moist, sunny bank, on rather peaty ground ; herb 2 ft. high with white flowers.

FERULA *L.*

- F. TINGITANA** *L.* ; Rechinger f., *Fl. Aegaea*, 410 (1943).
Recorded from Chios by *Orphanides*.

FERULAGO *Koch*

- F. HUMILIS** *Boiss.*, Rechinger f., *Fl. Aegaea*, 412 (1943).
Recorded from Chios by *Orphanides*.

Tordylium *L.*

- T. officinale** *L.*, *Sp. Pl.*, ed. 1, 239 (1753) ; Rechinger f., *Fl. Aegaea*, 414 (1943).
Above Neachóri, April 29, 1939, *Platt* 181 ; cultivated ground ; annual 1 ft. high with white flowers.
- T. apulum** *L.*, *Sp. Pl.*, ed. 1, 239 (1753) ; Rechinger f., *Fl. Aegaea*, 414 (1943).
Kampóchora, April 1, 1939, *Platt* 57 ; dry stony places ; annual herb 3–8 ins. high with white flowers.

Daucus *L.*

- D. involucratus** *Sibth. et Sm.*, *Fl. Graec. Prodr.*, 1, 184 (1806) ; Rechinger f., *Fl. Aegaea*, 416 (1943).
Haghios Constantinos, May 27, 1940, *Platt* 467 ; cultivated ground and roadside, herb 1–2 ins. high with pinky-white flowers.

D. GUTTATUS *Sibth. et Sm.* ; Rechinger f., Fl. Aegaea, 416 (1943).

West of the town, *Rechinger f.* 5342.

D. carota *L.*, Sp. Pl., ed. 1, 242 (1753) *sens. lat.* ; Rechinger f., Fl. Aegaea, 417 (1943).

Above Neachóri, February 15, 1940, *Platt* 390 ; cultivated terraces ; herb 6 ins. high with white flowers.

ORLAYA Hoffm.

O. PLATYCARPA (*L.*) *Koch* ; Rechinger f., Fl. Aegaea, 418 (1943).

Mt. Plaka, 700 m. alt., *Rechinger f.*, 5396.

Torilis *Adans.*

T. leptophylla (*L.*) *Reichb. f.*, Icones Fl. Germ., **21**, 83, t. 169 (1867) ; Rechinger f., Fl. Aegaea, 419 (1943).

Caucalis leptophylla *L.*, Sp. Pl., ed. 1, 242 (1753).

Haghios Constantinos, May 27, 1940, *Platt* 474 ; annual, 6–9 ins. high with mauve flowers and a very hairy fruit.

Thapsia *L.*

T. garganica *L.*, Mantissa, 57 (1767) ; Rechinger f., Fl. Aegaea, 415 (1943).

The Kámpos, June 2, 1940, *Platt* 524 ; on rocky ground, herb 2½ ft. high, flowers yellow.

ARALIACEAE

Hedera *L.*

H. helix *L.*, Sp. Pl., ed. 1, 202 (1753), Rechinger f., Fl. Aegaea, 397 (1943).

The Kámpos, Oct. 28, 1939, *Platt* 617 ; on walls, flowers white.

CAPRIFOLIACEAE

Sambucus *L.*

S. nigra *L.*, Sp. Pl., ed. 1, 269 (1753) ; Rechinger f., Fl. Aegaea, 582 (1943).

Without precise locality, April 24, 1939, *Platt* 172 ; shrub 12 ft. high with white flowers, not very common.

The specimens differ slightly from W. European Elder in having larger, broader leaflets and wide panicles of rather large flowers.

Viburnum *L.*

V. tinus *L.*, Sp. Pl., ed. 1, 267 (1753) ; Rechinger f., Fl. Aegaea, 583 (1943).

No locality given, Febr. 27, 1940, *Platt* 400.

Lonicera L.

L. etrusca *Santi*, Viagg. Montam., **1**, 113 (1795) ; Rechinger f., Fl. Aegaea, 584 (1943).

Widespread, no precise locality, June 30, 1939, *Platt* 306 ; climber with yellow flowers.

RUBIACEAE (det. Dr. F. Ehrendorfer)

Rubia L.

R. tinctorum *L.*, Sp. Pl., ed. 1, 109 (1753) ; Rechinger f., Fl. Aegaea, 582 (1943).

Kondári, June 2, 1940, *Platt* 521 ; herb 1½ ft. high, flowers greenish yellow. The Kámpos, Sept. 26, 1939 ; *Platt* 608 ; dry rough ground.

R. olivieri *Rich.* in Mem. Soc. Nat. Par., **5**, 132 (1834) ; Rechinger f., Fl. Aegaea, 582 (1943).

Kampóchora, April 9, 1952, *Platt* 72 ; on banks ; shrub with greenish-white flowers.

Galium L.

G. HELDREICHII *Hal.* ; Rechinger f., Fl. Aegaea, 572 (1943).

Valley west of Livadi, 400 m., *Rechinger f.* 5325.

G. samothracicum *Rech. f.* in Fedde Repert. Beih., **100**, 134 (1938) ; Fl. Aegaea, 572 (1943).

G. aureum Vis. var. *oblongifolium* Boiss., Fl. Or., **3**, 61 (1875).

Pelinaíon, June 5, 1939, *Platt* 249 ; stony places and cornfields ; perennial herb 6 ins. high with white flowers. Pelinaíon, July 9, 1939, *Platt* 328 ; stony places.

G. incanum *Sibth. et Sm.*, Fl. Graec. Prodr., **1**, 91 (1806) ; Rechinger f., Fl. Aegaea, 575 (1943) ; ssp. **incanum**.

G. orientale Boiss. var. *alpinum* Boiss., Fl. Or., **3**, 57 (1875).

Amádhēs, June 4, 1939, *Platt* 567 ; herb 4 ins. high with white flowers.

G. floribundum *Sibth. et Sm.*, Fl. Graec. Prodr., **1**, 94 (1806) ; Rechinger f., Fl. Aegaea, 578 (1943).

Amádhēs, June 5, 1939, *Platt* 588 ; herb 2 ins. high with brown flowers.

G. brevifolium *Sibth. et Sm.*, Fl. Graec., **2**, 26, t. 135 (1813) ; Rechinger f., Fl. Aegaea, 578 (1943).

Amádhēs, June 4, 1939, *Platt* 562 ; rocky ground ; herb 2 ins. high with blue flowers.

G. BREVIFOLIUM *Sibth. et Sm.* var. *CHIUM* (*Boiss. et Orph.*) *Rechinger f.*, Fl. Aegaea, 578 (1943).

Above Vrontado, 3000 ft. alt., *Orphanides* 554.

G. valantia *Web.* in *Wigg.*, *Primit. Fl. Holsat.*, 12 (1780) ; *Rechinger f.*, *Fl. Aegaea*, 579 (1943).

Kardhámyla, March 6, 1940, *Platt* 417 ; sunny hillside ; prostrate herb with white flowers.

G. tricornis *Stokes* in *With.*, *Bot. Arr.*, ed. 2, **1**, 153 (1787) ; *Rechinger f.*, *Fl. Aegaea*, 579 (1943).

Kardhámyla, April 11-13, 1939, *Platt* 79 ; on sunny cultivated land ; annual "sticky" weed.

Asperula L.

A. arvensis *L.*, *Sp. Pl.*, ed. 1, 103 (1753) ; *Rechinger f.*, *Fl. Aegaea*, 565 (1943).

Amádhēs, Pytiós area, June 5, 1939, *Platt* 585 ; annual 4-5 ins. high with blue flowers.

A. nitida *Sibth. et Sm.* var. **hirtella** *Boiss.*, *Fl. Or.*, **3**, 39 (1875) ; *Rechinger f.*, *Fl. Aegaea*, 567 (1943).

Summit of Pelinaíon, July 12, 1939, *Platt* 358 ; amongst stones ; prostrate herb with pink flowers.

CRUCIANELLA L.

C. LATIFOLIA *L.*, *Rechinger f.*, *Fl. Aegaea*, 564 (1943).

Mt. Plaka, 700 m. alt., *Rechinger f.* 5336.

Sherardia L.

S. arvensis *L.*, *Sp. Pl.*, ed. 1, 102 (1753) ; *Rechinger f.*, *Fl. Aegaea*, 563 (1943).

Kampóchora, Febr. 2, 1939, *Platt* 15 ; annual herb with mauve flowers. Haghiós Constantinos, May 27, 1940, *Platt* 470 ; roadsides and cultivated ground ; herb 1 in. high with small mauve flowers.

VALERIANACEAE

Valerianella (Tourn. ex Haller) Moench

V. VESICARIA (*L.*) *Moench* ; *Rechinger f.*, *Fl. Aegaea*, 586 (1943).

Recorded from Chios by *Orphanides*.

V. discoidea (*L.*) *Lois.*, *Not. Pl. Fr.*, 148 (1810) ; *Rechinger f.*, *Fl. Aegaea*, 586 (1943).

Valeriana locusta *L.* var. *discoidea* *L.*, *Syst. Veg.*, ed. 10, 860 (1759).

Kampóchora, April 9, 1939, *Platt* 74 ; in cornfields ; herb 6 ins. high, annual, with mauve-white capitate heads. Kampiá, April 16-17, 1939, *Platt* 141 ; cultivated slopes below village on dry ground ; annual, 4 ins. high with mauve flowers.

V. OBTUSIFOLIA *Boiss.* ; *Rechinger f.*, *Fl. Aegaea*, 586 (1943).

Recorded from Chios by *Orphanides*.

Valeriana L.

V. dioscoridis *Sibth. et Sm.*, Fl. Graec. Prodr., **1**, 21 (1806) ; Rechinger f., Fl. Aegaea, 588 (1943).

Haghios Geórgios Sykousis, March 29, 1939, *Platt* 42 ; amongst stones at roadside, showing a preference for moist places ; herb 6-18 ins. high with mauve flowers. Also in the north of the island.

Kentranthus Neck.

K. calcitrapa (*L.*) *Dufresne*, Hist. Valér., 39 (1811) ; Rechinger f., Fl. Aegaea, 589 (1943) as *K. calcitrapa* DC.

Valeriana calcitrapa L., Sp. Pl., ed. 1, 31 (1753).

Cultivated slopes above Neachóri, April 22, 1939, *Platt* 171 ; herb 9 ins. high with pink flowers.

DIPSACACEAE

Knautia L.

K. integrifolia (*L.*) *Bert.* var. **bidens** (*Sibth. et Sm.*) *Borb.*, Rev. Knautia, 85 (1904) ; Rechinger f., Fl. Aegaea, 591 (1943).

Scabiosa bidens *Sibth. et Sm.*, Fl. Graec. Prodr., **1**, 80 (1806).

Pytiós, May 26, 1939, *Platt* 216 ; dry bank outside village ; annual, 1 ft. high with mauve flowers.

K. INTEGRIFOLIA (*L.*) *Bert.* f. **LYRATA** (*Koch*) *Hayek* ; Rechinger f., Fl. Aegaea, 591 (1943).

Hill west of the town, *Rechinger f.*, 5331 a.

Pterocephalus Vaill. ex Adans.

P. pinardi *Boiss.*, Diagn., 1, **5**, 88 (1844) ; Rechinger f., Fl. Aegaea, 592 (1943).

Summit of Pelinaíon, July 12, 1939, *Platt* 352 ; herb with woody stem, 2 ins. high, flowers pink.

P. PLUMOSUS (*L.*) *Coult.* ; Rechinger f., Fl. Aegaea, 592 (1943).

Hill west of the town, 300 m. alt., *Rechinger f.*, 5331 b.

Scabiosa L.

S. polycratis *Rechinger f.* in Magyar Bot. Lap., **33**, 12 (1934) et in Fl. Aegaea, 594 (1943).

Pelinaíon, July 12, 1939, *Platt* 355 ; on flat rocky ground ; herb 2 ins. high with white flowers.

S. atropurpurea L. var. **maritima** (*Torn.*) *Bég.* in Fiori et Paoli, Fl. Anal. It., **3**, 152 (1903) ; Rechinger f., Fl. Aegaea, 595 (1943).

S. maritima *Torn.* in Linn., Cent. Pl., **2**, 8 (1756).

The Kámpos, June 26, 1939, *Platt* 292 ; on sunny bank ; herb 2 ft. high with mauve flowers.



FIG. 7. *Pterocephalus pinardi* Boiss. Habit, natural size. Floral analysis $\times 3$. Fruit $\times 3$.

COMPOSITAE

Bellis L.

B. perennis L., Sp. Pl., ed. 1, 886 (1753) ; Rechinger f., Fl. Aegaea, 607 (1943).

Pelinaion, April 14–15, 1939, *Platt* 124 ; grassy slopes ; herb 1–2 ins. high with white flowers. Panaghia Krína, Febr. 29, 1940, *Platt* 411 ; rough ground ; herb 2 ins. high with white flowers.

The morphological distinctions between the three *Bellis* species—*B. perennis* L., *B. hybrida* Ten. and *B. sylvestris* Cyr.—are by no means as clear-cut as some authors suggest. Leaf-shape and size of capitula provide perhaps the most trustworthy characters ; and using these the above specimens, like many others from southern Europe and the Mediterranean area, fall somewhere between typical *B. perennis* and the doubtful *B. hybrida*. Leaf-nervation I find rather an illusory character, since none of the *Bellis* leaves examined are strictly uninerved, in some plants the lateral nerves are less prominent than in others. Genuine *B. sylvestris* can usually be distinguished by its oblong leaves and elongate involucre bracts, but these characters show considerable plasticity. (See Carano and Bambacioni in Ann. di Bot., **16**, 9 (1926) for a very interesting account of *Bellis*, with particular reference to *B. hybrida* Ten.)

B. sylvestris Cyr., Pl. Rar. Regn. Neap., **2**, 42 (1792) ; Rechinger f., Fl. Aegaea, 607 (1943).

The Kámpos, Jan. 7, 1940, *Platt* 370 ; banks and fields, herb 6 ins. high ; ray petals white with crimson reverse.

Evax Gaertn.

E. pygmaea (L.) Pers., Syn. Pl., **2**, 422 (1807) ; Rechinger f., Fl. Aegaea, 609 (1943).

Filago pygmaea L., Sp. Pl., ed. 1, 827 (1753).

Kampóchora, April 22, 1939, *Platt* 169 ; annual $\frac{1}{4}$ ins. high.

FILAGO L.

FILAGO GERMANICA L. var. LANUGINOSA (*Duby*) DC. ; Rechinger f., Fl. Aegaea, 610 (1943) :

Recorded from Chios by *Pauli*.

Phagnalon Cass.

P. graecum Boiss. et Heldr. in Boiss., Diagn., 1, **11**, 6 (1849) ; Rechinger f., Fl. Aegaea, 615 (1943).

No precise locality, May 28, 1940, *Platt* 484, dry slopes and walls ; subshrub, 6–9 ins. high with yellow flowers.

Helichrysum Pers.

H. siculum (*Spreng.*) Boiss., Fl. Or., **3**, 229 (1875) ; Rechinger f., Fl. Aegaea, 613 (1943).

Gnaphalium siculum Spreng., Syst. Veg., **3**, 476 (1826).

Kampóchora, May 6, 1939, *Platt* 212. General throughout the island, May 6, 1939, *Platt* 262 ; rocks and stony places ; herb 6-9 ins. high with yellow flowers.

***Inula* L.**

- I. heterolepis** Boiss., *Diagn.*, 2, **3**, 12 (1856) ; Rechinger f., *Fl. Aegaea*, 617 (1943).

From sea-level to summit of Pelinaíon, July 12, 1939, *Platt* 345 ; on rocks ; herb 1 ft. high with yellow flowers.

- I. viscosa** (L.) Ait., *Hort. Kew.*, ed. 1, 223 (1789) ; Rechinger f., *Fl. Aegaea*, 618 (1943).

Erigeron viscosum L., *Sp. Pl.*, ed. 1, 863 (1753).

The Kámpos, Sept. 26, 1939, *Platt* 601 ; on banks, herb 18 ins. to 2 ft. high with yellow flowers.

- I. graveolens** (Jusl.) Desf., *Fl. Atl.*, 2, 275 (1800) ; Rechinger f., *Fl. Aegaea*, 619 (1943).

Erigeron graveolens Jusl. ap. L., *Amoen. Acad.*, 4, 290 (1759).

Without locality or date, *Platt* s.n.

***Pulicaria* Gaertn.**

- P. uliginosa** Stev. in DC., *Prodr.*, 5, 478 (1836) ; Rechinger f., *Fl. Aegaea*, 619 (1943).

P. dysenterica (L.) Gaertn. var. *microcephala* Boiss., *Fl. Or.*, 3, 202 (1875).

The Kámpos, Sept. 26, 1934, *Platt* 600 ; on banks ; herb 18 ins. to 2 ft. high with rich yellow flowers.

***Asteriscus* Moench**

- A. aquaticus** (L.) Less., *Syn. Comp.*, 210 (1832) ; Rechinger f., *Fl. Aegaea*, 621 (1943).

Buphthalmum aquaticum L., *Sp. Pl.*, ed. 1, 903 (1753).

The Kámpos ; Kardhámyla, June 26, 1939, *Platt* 290, poor sunny ground ; herb 6 ins. high with yellow flowers.

***Pallenis* Cass.**

- P. spinosa** (L.) Cass. in *Dict. Sc. Nat.*, 37, 276 (1825) ; Rechinger f., *Fl. Aegaea*, 620 (1943).

Buphthalmum spinosum L., *Sp. Pl.*, ed. 1, 903 (1753).

Pytiós, May 26, 1939, *Platt* 217 ; dry places ; herb 9-18 ins. high with yellow flowers.

***Otanthus* Hoffmsgg. et Link**

- O. maritimus** (L.) Hoffmsgg. et Link, *Fl. Port.*, 2, 365 (1820).

Filago maritima L., *Sp. Pl.*, ed. 1, 927 (1753).

Diotis maritima (L.) Sm., *Engl. Fl.*, 3, 403 (1825).

Near Kondári, June 24, 1939, *Platt* 283 ; on sand dunes ; prostrate herb with yellow flowers.

Anthemis L.

- A. smyrnaea** Boiss., *Diagn.*, 1, **4**, 7 (1844) ; Rechinger f., *Fl. Aegaea*, 626 (1943).

Summit of Pelinaíon, May 28, 1939, *Platt* 226 ; herb 3 ins. high in sunny places ; flowers yellow, no ray florets.

- A. taygetea** Boiss. et Heldr. in Boiss., *Diagn.*, 1, **6**, 83 (1845) ; Rechinger f., *Fl. Aegaea*, 626 (1943).

Amádhēs, June 4, 1939, *Platt* 558 ; rocky ground ; herb 4 ins. high with white flowers.

- A. chia** L., *Sp. Pl.*, ed. 1, 894 (1753) ; Rechinger f., *Fl. Aegaea*, 627 (1943).

Everywhere, March 24–28, 1939, *Platt* 9 ; annual 3–9 ins. high with white flowers.

- A. tomentosa** L., *Sp. Pl.*, ed. 1, 893 (1753) ; Rechinger f., *Fl. Aegaea*, 627 (1943).

Kardhámyla area, June 3, 1939, *Platt* 541 ; sandy beach on Amádhēs road ; herb 6 ins. high with white flowers.

- A. cretica** L., *Sp. Pl.*, ed. 1, 895 (1753) ; Rechinger f., *Fl. Aegaea*, 627 (1943).

Above beach at Kallimasiá ; end of Chios harbour, May 1, 1939, *Platt* 194 ; prostrate herb with yellow flowers. Amádhēs, June 4, 1939, *Platt* 559 ; rocky ground, herb $\frac{1}{2}$ in. high with yellow flowers.

Chrysanthemum L.

- C. segetum** L., *Sp. Pl.*, ed. 1, 889 (1753) ; Rechinger f., *Fl. Aegaea*, 630 (1943).

Amádhēs, April 14–15, 1939, *Platt* 129 ; stony fields above beach ; annual 1 ft. high with deep yellow flowers. Amádhēs beach, June 4, 1939, *Platt* 250.

- C. coronarium** L., *Sp. Pl.*, ed. 1, 890 (1753) ; Rechinger f., *Fl. Aegaea*, 631 (1943).

The Kámpos ; beach below Kallimasiá, April 22, 1939, *Platt* 168 ; herb 2–3 ft. high, flowers cream with yellow centres. Without locality, May 1, 1939, *Platt* 193.

Matricaria L.

- M. chamomilla** L., *Sp. Pl.*, ed. 1, 891 (1753) ; Rechinger f., *Fl. Aegaea*, 633 (1943).

The Kámpos, general, May 26, 1940, *Platt* 457 ; herb 3–6 ins. high with white flowers.

Senecio L.

- S. CINERARIA** DC. var. **BICOLOR** (Willd.) Fiori et Paoli ; Rechinger f., *Fl. Aegaea*, 637 (1943).

Mt. Plaka, 700 m., alt., *Rechinger f.*, 5358.

S. cineraria DC. var. **Plattii** Meikle var. nov., *S. cinerariae* DC. var. *bicolori* (Willd.) Fiori et Paoli affinis, sed inflorescentiis gracilioribus, multiramosis et involucris glabris vel sparsissime arachnoideis conspicue differt.

Between Mármaro and Amádhēs, July 9, 1939, *Platt* 327 ; sunny slopes and cliffs above sea ; subshrub 2 ft. high with yellow flowers.

I follow Hayek in regarding *Cineraria bicolor* Willd. as a variety of *Senecio cineraria* DC., and it is with var. *bicolor* that the plant described above has its closest affinities. The lax and graceful corymbs, and glabrous or almost glabrous involucre are a distinctive feature of the Chian plant, unmatched by any other specimen in the Kew collections though approaching an unnamed specimen (*Davis* 960) from the Cyclades. It is clear that many variants of *S. cineraria* DC. aggr. from the Eastern Mediterranean are deserving of nomenclatural recognition.

S. vernalis Waldst. et Kit., Pl. Rar. Hung., **1**, 23 (1830) ; Rechinger f., Fl. Aegaea, 638 (1943).

Slopes above and below Haghios Geórgios Sykoúsis, March 29, 1939, *Platt* 41 ; in sun ; annual 1–6 ins. high ; flowers large, yellow.

S. vulgaris L., Sp. Pl., ed. 1, 867 (1753) ; Rechinger f., Fl. Aegaea, 638 (1943).

The Kámpos, Febr. 7, 1940, *Platt* 376 ; cultivated land ; annual 3–18 ins. high with yellow flowers.

Calendula L.

C. arvensis L., Sp. Pl., ed. 2, 1303 (1763) ; Rechinger f., Fl. Aegaea, 639 (1943).

The Kámpos, everywhere on cultivated land, Jan. 3 and Febr. 15, 1939, *Platt* 23 ; flowers orange-yellow.

Echinops L.

E. viscosus DC. ssp. **GLANDULOSUS** (Weiss.) Rechinger f., Fl. Aegaea, 641 (1943).

Collected in Chios, *Pauli* 559.

E. microcephalus Sibth. et Sm., Fl. Graec. Prodr., **2**, 209 (1813) ; Rechinger f., Fl. Aegaea, 642 (1943).

Amádhēs, July 11, 1939, *Platt* 340 ; sunny cornfields ; herb 1–1½ ft. high with blue flowers.

Cardopatum Juss. ex Pers.

C. corymbosum (L.) Pers., Syn., **2**, 500 (1807) ; Rechinger f., Fl. Aegaea, 643 (1943).

Echinops corymbosus L., Sp. Pl., ed. 1, 815 (1753).

No precise locality, but widespread in the island, June 24, 1939, *Platt* 285 ; poor soil near seashore in sunny places ; herb 1 ft. high with blue flowers.



FIG. 8. *Senecio cineraria* DC. var. *Plattii* Meikle Plant, natural size. Leaf $\times \frac{2}{3}$. Floral analysis $\times 6$. Pappus hair $\times 30$.

Carlina L.

C. corymbosa L. var. **graeca** Boiss., Fl. Or., 3, 449 (1875).

C. graeca Heldr. et Sart. in Heldr., Herb. Graec. no. 423; Hal., Consp. Fl. Graec., 2, 97 (1902); Hayek, Prodr. Fl. Pen. Balc., 2, 695 (1931).

C. corymbosa L. ssp. *graeca* (Heldr. et Sart.) Rechinger f., Fl. Aegaea, 644 (1943).

The Kámpos, Sept. 26, 1939, *Platt* 616; very prickly herb 9–18 ins. high with yellow flowers.

C. lanata L., Sp. Pl., ed. 1, 828 (1753); Rechinger f., Fl. Aegaea, 645 (1943).

Amádhes, July 11, 1939, *Platt* 343; roadside amongst stones; herb 1 in. high with pink flowers.

Atractylis L.

A. gummifera L., Sp. Pl., ed. 1, 829 (1753); Rechinger f., Fl. Aegaea, 645 (1943).

The Kámpos, Oct. 6, 1939, *Platt* 620; rough rocky hillside; herb 2 ins. high with purple flowers.

A. CANCELLATA L.; Rechinger f., Fl. Aegaea, 645 (1943).

Hill west of the town, *Rechinger f.* 5280.

Carduus L.

C. nutans L., Sp. Pl., ed. 1, 821 (1753); Rechinger f., Fl. Aegaea, 649 (1943).

No precise locality, June 1, 1939, *Platt* 235; sunny slopes amongst goat-browsed *Acer*, *Berberis* and *Quercus coccifera*; herb 1 ft. high with purple flowers.

C. NUTANS L. ssp. **INCONSTRICUS** O. Schwarz; Rechinger f., Fl. Aegaea, 649 (1943).

Mt. Plaka, 1000 m. alt.; *Rechinger f.* 5370.

Notobasis Cass.

N. syriaca (L.) Cass. in Dict. Sc. Nat., 25, 225 (1822); Rechinger f., Fl. Aegaea, 651 (1943).

Carduus syriacus L., Sp. Pl., ed. 1, 823 (1753).

No locality or date, *Platt* s.n.

Chamaepeuce DC.

C. alpini Jaub. et Spach, Ill., 5, 26, t. 425 (1842); Rechinger f., Fl. Aegaea, 653 (1943).

Sklaviá, May 29, 1940, *Platt* 499; amongst rocks; subshrub 2½ ft. high with purple flowers.

PICNOMON *Adans.*

P. ACARNA (L.) Cass. ; Rechinger f., Fl. Aegaea, 654 (1943).

Seen in Chios by *Rechinger f.*

SILYBUM *Adans.*

S. MARIANUM (L.) Gaertn. ; Rechinger f., Fl. Aegaea, 655 (1943).

Collected in Chios, *Orphanides* 769.

Onopordon *L.*

O. TAURICUM Willd. var. *ARGOLICUM* Boiss. ; Rechinger f., Fl. Aegaea, 656 (1943).

Recorded from Chios by *Orphanides*.

O. bracteatum Boiss. et Heldr., in Boiss., Diagn., 1, **10**, 21 (1849) ; Rechinger f., Fl. Aegaea, 657 (1943).

Pelinaíon, July 8, 1939, *Platt* 325 ; sunny slope high up the mountain ; herb 6 ft. high with purple flowers.

O. ILLYRICUM L. ; Rechinger f., Fl. Aegaea, 657 (1943).

Valley of Livadi, 500 m. alt., *Rechinger f.* 5277.

Jurinea *Cass.*

J. anatolica Boiss., Diagn., 1, **4**, 21 (1844) ; Rechinger f., Fl. Aegaea, 647 (1943).

No precise locality, April 29, 1939, *Platt* 178 ; dry hillsides ; herb 18 ins. high with purple flowers.

J. ANATOLICA Boiss. ssp. *CADMEA* (Boiss.) O. Schwarz ; Rechinger f., Fl. Aegaea, 647 (1943).

Recorded from Chios by *Orphanides*.

Centaurea *L.*

C. urvillei DC., Prodr., **6**, 592 (1838) ; Rechinger f., Fl. Aegaea, 666 (1943).

Pelinaíon, July 9, 1939, *Platt* 330 ; amongst stones high on mountain ; herb 1 ins. high with pink flowers.

The specimens, unfortunately in poor condition at time of examination, are all remarkably small-flowered, and at first sight look more like *C. mixta* DC. than *C. urvillei*. They show, however, the arachnoid indumentum characteristic of the latter species, a feature not seen in genuine *C. mixta*. Further investigation may prove them to be at least locally distinct variants of the variable *C. urvillei*.

C. polyclada DC., Prodr., **6**, 584 (1838) ; Rechinger f., Fl. Aegaea, 667 (1943).

The Kámpos, Sept. 26, 1939, *Platt* 597 ; rough ground ; twiggy subshrub 5-9 ins. high with purple flowers.

- C. spinosa** L., Sp. Pl., ed. 1, 912 (1753) ; Rechinger f., Fl. Aegaea, 667 (1943).

Hills between Kouroúnia and Hagion Ghálas, June 24, 1939, *Platt* 282 ; seashore and rocks above sea ; subshrub 6–12 ins. high with mauvy-white flowers.

- C. solstitialis** L., Sp. Pl., ed. 1, 917 (1753) ; Rechinger f., Fl. Aegaea, 668 (1943).

General, without precise locality, July 17, 1939, *Platt* 359 ; herb 6–9 ins. high with yellow flowers.

AEGIALOPHILA Boiss. et Heldr.

- A. CRETICA** Boiss. et Heldr. ; Rechinger f., Fl. Aegaea, 669 (1943).

Recorded from Chios by *Olivier*.

Carthamus L.

- C. dentatus** (Forsk.) Vahl, Symb., 1, 69 (1790) ; Rechinger f., Fl. Aegaea, 670 (1943).

Cnicus dentatus Forsk., Fl. Aegypt.-Arab., 217 (1775).

The Kámpos, Sept. 26, 1939, *Platt* 615 ; rough ground ; prickly herb 6–12 ins. high with pink flowers.

Scolymus L.

- S. hispanicus** L., Sp. Pl., ed. 1, 813 (1753) ; Rechinger f., Fl. Aegaea, 671 (1943).

Widespread, without precise locality, June 26, 1939, *Platt* 295 ; herb 1½ ft. high with yellow flowers.

Cichorium L.

- C. pumilum** Jacq., Obs., 4, 3, t. 80 (1771) ; Rechinger f., Fl. Aegaea, 672 (1943).

Amádhēs, Pelinaíon, general, July 8, 1939, *Platt* ? 324 ; cornfields, sunny banks ; herb 1 ft. high with blue flowers. Without locality or date, *Platt* s.n.

Hedypnois Scop.

- H. rhagadioloides** (L.) Willd., Sp. Pl., 3, 1617 (1804) ; Rechinger f., Fl. Aegaea, 677 (1943).

Hyoseris rhagadioloides L., Sp. Pl., ed. 1, 809 (1753).

Beach below Amádhēs, April 14–15, 1939, *Platt* 127 ; herb 1 in. high with yellow flowers.

TOLPIS Gaertn.

- T. UMBELLATA** Bert. ; Rechinger f., Fl. Aegaea, 675 (1943).

Recorded from Chios by *Orphanides*.

- T. VIRGATA** (Desf.) Bert. ; Rechinger f., Fl. Aegaea, 675 (1943).

Hill west of the town, 300 m., *Rechinger* f. 5347.

PICRIS L.

- P. PAUCIFLORA* Willd. ; Rechinger f., Fl. Aegaea, 682 (1943).
Mt. Plaka, 700 m. alt., *Rechinger f.* 5356.

Crepis L.

- C. montana** Urv. in Mem. Soc. Linn. Par., **1**, 357 (1822); Babç., The Genus *Crepis*, 288 (1947).
C. reuteriana Rechinger f., Fl. Aegaea, 699 (1943) *pro parte nec* Boiss., Diagn., **1**, **11**, 55 (1849).
C. fraasii Sch. Bip. in Flora, **25**, 173 (1842).
C. sieberi Boiss., Diagn., **1**, **11**, 53 (1849).
Amádhes, June 4, 1939, *Platt* 553 ; rocky ground ; herb 9–14 ins. high with yellow flowers.
- C. parviflora** Desf. ex Pers., Syn. Pl., 376 (1807) ; Rechinger f., Fl. Aegaea, 699 (1943) ; Babç. The Genus *Crepis*, 775 (1947).
The Kámpos, May 26, 1940, *Platt* 458 ; dry banks ; herb 3–6 ins. high with small yellow flowers.

- C. foetida** L., ssp. **commutata** (*Spreng.*) Babç. in Journ. Bot., **76**, 209 (1938).

Rodigia commutata Spreng., Neu. Entd., **1**, 273 (1820) ; Rechinger f., Fl. Aegaea, 688 (1943).

Without precise locality, general, June 26, 1939, *Platt* 294 ; herb with yellow flowers. The Kámpos, May 20, 1940, *Platt* 448 ; dry banks etc. ; herb with prostrate stems and yellow flowers.

- C. MULTIFLORA* Sibth. et Sm. ; Rechinger f., Fl. Aegaea, 702 (1943).
Valley west of Livadi, *Rechinger f.* 5306 c.

- C. SANCTA* L. ssp. *NEMAUSENSIS* (*Gouan*) Thell. ; Rechinger f. in Phytion, **1**, 220 (1949).
Chios, *Guiol.*

Hieracium L.

- H. auriculoides** Lang ssp. **nudescens** Naegel. et Peter, Hierac. Mitteleurop., **1**, 759 (1885).

Amádhes, June 4, 1939, *Platt* 557 ; rocky ground ; herb 18 ins. high with yellow flowers.

These specimens are probably identical with the plants collected in Chios by Rechinger f. (R. 5381) and named *H. bauhini* Bess. ssp. *hispidissimum* (Rehm.) Zahn in Fl. Aegaea 705. I am not at all certain that *H. auriculoides* ssp. *nudescens* and *H. bauhini* ssp. *hispidissimum* are in fact distinguishable, the one being a $\pm$ glabrous form of a $\pm$ hispid species, the other a $\pm$ hispid form of a $\pm$ glabrous species, but on the whole I feel that the Chian material is more closely related to typical *H. auriculoides* than to typical *H. bauhini* and have for that reason departed from the decision made in Fl. Aegaea. The type of *H. auriculoides* ssp. *nudescens* is from Smyrna (*Balansa* 405).

Leontodon L.

L. crispus Vill. ssp. **graeus** (Boiss. et Heldr.) Hay. in Prodr. Fl. Pen. Balc., 2, 813 (1931) ; Rechinger f., Fl. Aegaea, 681 (1943).

L. graeus Boiss. et Heldr. in Boiss., Diagn., 1, 11, 39 (1849).

Pelinaíon, May 28, 1939, *Platt* 223 ; herb 3 ins. high with yellow flowers. Just below summit of Pelinaíon, July 9, 1939, *Platt* 331 ; amongst stones ; herb 2 ins. high ; flowers yellow with bronze stripe externally. Amádhēs, June 4, 1939, *Platt* 564 ; rocky ground ; herb 3-4 ins. high with yellow flowers.

L. tuberosus L., Sp. Pl., ed. 1, 799 (1753) ; Rechinger f., Fl. Aegaea, 681 (1943).

Without locality or date, *Platt* s.n.

L. TUBEROSUS L. var. **OLIVIERI** (DC.) Vierh. ; Rechinger f., Fl. Aegaea, 681 (1943).

Recorded from Chios by *Olivier*.

Taraxacum Hall. f.

T. megalorrhizon (Forsk.) Hand.-Mzt., Mon. Tarax., 38 (1907) ; Rechinger f., Fl. Aegaea, 691 (1943).

Leontodon megalorrhizon Forsk., Fl. Aegypt.-Arab., 216 (1775).

Pelinaíon, April 14-15, 1939, *Platt* 123 ; grassy places ; herb 1-2 ins. high with yellow flowers. Kampóchora, Febr. 27, 1940, *Platt* 403 ; banks ; herb $\frac{1}{2}$ in. high with yellow flowers.

T. ALEPPICUM Dahlst. ; Rechinger f., Fl. Aegaea, 692 (1943).

Vrontado, *Orphanides* 345.

Chondrilla L.

C. juncea L., Sp. Pl., ed. 1, 796 (1753) ; Rechinger f., Fl. Aegaea, 690 (1943).

The Kámpos, Sept. 26, 1939, *Platt* 606 ; rough ground by roadside ; twiggy herb to 9 ins. or more high, flowers yellow, sparsely produced.

Lactuca L.

L. INTRICATA Desf. ; Rechinger f., Fl. Aegaea, 695 (1943).

Mt. Plaka, 700 m. alt., *Rechinger f.* 5368.

L. viminea (L.) Presl, Fl. Cech., 160 (1819) ; Rechinger f., Fl. Aegaea, 696 (1943).

Prenanthes vimineus L., Sp. Pl., ed. 1, 797 (1753).

Pelinaíon, July 8, 1939, *Platt* 323 ; wheat fields ; herb 6-9 ins. high with yellow flowers. Amádhēs, general, July 8, 1939, *Platt* 324 ; sunny banks and cornfields, herb 1 ft. high.

Reichardia Roth

R. picroides (L.) Roth var. **leontodontiformis** Ginzb. in Ost. Bot. Zeitschr., **70**, 245 (1921) ; Rechinger f., Fl. Aegaea, 693 (1943).

Amádhēs, April 14–15, 1939, *Platt* 135 ; stony soil above beach ; herb 4–5 ins. high, leaves glaucous.

Sonchus L.

S. glaucescens Jord., Obs. Pl. Nouv., **5**, 75 (1847) ; Rechinger f., Fl. Aegaea, 694 (1943).

Amádhēs, June 4, 1939, *Platt* 551 ; rocky ground ; herb 2–4 ft. high with yellow flowers.

S. oleraceus (L.) Gouan, Hort. Monsp., 407 (1762) ; Rechinger f., Fl. Aegaea, 694 (1943).

S. oleraceus β *laevis* L., Sp. Pl., ed. 1, 794 (1753).

Cultivated ground, no precise locality, Febr. 2, 1939, *Platt* 24 ; herb 18–24 ins. high with small yellow flowers.

Tragopogon L.

T. LONGIROSTRIS Bisch. ; Rechinger f., Fl. Aegaea, 684 (1943).

Hill west of the town, 300 m. alt., *Rechinger f.* 5320.

T. dubius Scop., Fl. Carn., **2**, 95 (1760) ; Rechinger f., Fl. Aegaea, 685 (1943).

Haghios Constantinos, May 27, 1940, *Platt* 478 ; edges of fields and banks ; herb 1–2 ft. high with yellow flowers.

T. PICHLERI Boiss., Rechinger f., Fl. Aegaea, 685 (1943).

“On limestone rocks by the water-mill, 1000 m. alt.” *Pauli* ; Mt. Plaka, 1000 m. alt., *Rechinger f.* 5400.

? **T. hybridus** L., Sp. Pl., ed. 1, 789 (1753) ; Rechinger f., Fl. Aegaea, 685 (1943).

Without locality or date, *Platt* s.n. ; a single flowering shoot.

Scorzonera L.

S. elata Boiss., Diagn., 1, **4**, 25 (1844) ; Rechinger f., Fl. Aegaea, 686 (1943).

Sklaviá, May 29, 1946, *Platt* 497 ; dry places amongst stones ; annual 6 ins. high with yellow flowers.

Podospermum DC.

P. canum C. A. Mey., Verz. Pfl. Cauc., 62 (1831) ; Rechinger f., Fl. Aegaea, 688 (1943).

Amádhēs, June 4, 1939, *Platt* 552 ; rocky ground ; herb 3–6 ins. high, flowers yellow.

CAMPANULACEAE

Asyneuma Griseb. et Schenk

- A. cichoriiforme** (Boiss.) Bornm. in Bot. Centralbl. Beih., **38**, 2, 340 (1921) ; Rechinger f., Fl. Aegaea, 606 (1943).

Phyteuma cichoriiforme Boiss., Diagn., 1, **4**, 37 (1844).

Summit of Pelinafon, July 12, 1939, *Platt* 357 ; herb 6 ins. high with blue flowers.

Campanula L.

- C. lyrata** Lam., Encycl., **1**, 588 (1785) ; Rechinger f., Fl. Aegaea, 599 (1943).

No precise locality, April 29, 1939, *Platt* 179 ; pathsides and rocks, very general ; herb 18 ins. high with lavender-blue flowers.

- C. TOMENTOSA** Vent. ; Rechinger f., Fl. Aegaea, 599 (1943).

Collected in Chios by *Aucher-Eloy*.

- C. hagielia** Boiss., Fl. Or., **3**, 899 (1875) ; Rechinger f., Fl. Aegaea, 599, (1943).

No precise locality, June 2, 1939, *Platt* 240 ; very general.

- C. erinus** L., Sp. Pl., ed. 1, 169 (1753) ; Rechinger f., Fl. Aegaea, 601 (1943).

Haghios Constantinos, May 27, 1940, *Platt* 468 ; cultivated ground ; herb 2-6 ins. high with mauve flowers.

Legousia Durande

- L. pentagonia** (L.) Thell. in Viertelj. Naturwiss. Gesellsch. Zürich, **52**, 465 (1907) ; Rechinger f., Fl. Aegaea, 603 (1943).

Campanula pentagonia L., Sp. Pl., ed. 1, 169 (1753).

Below Amádhes, April 14-15, 1939, *Platt* 125 ; poor sunny ground ; annual, taller (in the Kámpos) on edges of cornfields ; herb 2-9 ins. high.

- L. SPECULUM-VENERIS** (L.) Fisch. ex Schinz et Thell. ; Rechinger f., Fl. Aegaea, 603 (1943).

Recorded from Chios, *Orphanides* 664.

ERICACEAE

Arbutus L.

- A. unedo** L., Sp. Pl., ed. 1, 395 (1753) ; Rechinger f., Fl. Aegaea, 431 (1943).

General, no precise locality, Jan. 8, 1940, *Platt* 373, stony country and amongst pines in open woodland ; shrub 3-5 ft. high with white or pinkish flowers.

Erica L.

E. arborea L., Sp. Pl., ed. 1, 353 (1753) ; Rechinger f., Fl. Aegaea, 432 (1943).

Kardhámyla, March 6, 1940, *Platt* 414 ; dry schistose hills, shrub 3 ft. high with white flowers.

E. verticillata Forsk., Fl. Aegypt.-Arab., 210 (1775) ; Rechinger f., Fl. Aegaea, 432 (1943).

General, no precise locality, June 18, 1939, *Platt* 278 ; hillsides on schistose ground ; herb $1\frac{1}{2}$ ft. to 3 ft. high with pink flowers.

PLUMBAGINACEAE

Limonium Mill.

L. sinuatum Mill., Gard. Dict., ed. 8, no. 6 (1768) ; Rechinger f., Fl. Aegaea, 427 (1943) *in sched.*

Statice sinuata L., Sp. Pl., ed. 1, 276 (1753) ; Rechinger f., Fl. Aegaea, 428 (1943).

Kondári, July 19, 1939, *Platt* 312 ; small banks by sea ; herb 6–12 ins. high with lavender-blue flowers.

L. sieberi (Boiss.) O. Kuntze, Rev. Gen., 1, 396 (1891) ; Rechinger f., Fl. Aegaea, 427 (1943) *in sched.*

Statice sieberi Boiss., Voy. Bot. Espagne, 530 (1841) ; Rechinger f., Fl. Aegaea, 425 (1943).

Kondári, July 19, 1939, *Platt* 316 ; on seashore ; herb 9 ins. high with lavender-blue flowers.

The leaves and stems of the Chian material are more distinctly scabrous-tuberculate than in typical *L. sieberi*, but the inflorescences and flowers agree with this species, and, together with differences in habit, distinguish the plant from *L. hyssopifolium* (Ger.) Rech. f.

Plumbago L.

P. europaea L., Sp. Pl., ed. 1, 151 (1753) ; Rechinger f., Fl. Aegaea, 426 (1943).

The Kámpos, Sept. 26, 1939, *Platt* 602, banks and rough ground ; semi-prostrate herb, up to $2\frac{1}{2}$ ft. high with blue flowers.

PRIMULACEAE

Cyclamen L.

C. persicum Mill., Gard. Dict., ed. 8, no. 3 (1768) ; Rechinger f., Fl. Aegaea, 434 (1943) ; Doorenbos in Med. Landb. Wagen., 50, 3, 34 (1950).

Below Haghios Geórgios Sykoúsis, Jan. 19, 1939, *Platt* 49, amongst stones in sun ; herb 6 ins. high with large, cordate, marbled foliage and white or pink flowers.

C. neapolitanum *Ten.*, Fl. Nap., **3**, 197 (1824-29) ; Rechinger f., Fl. Aegaea, 435 (1943) ; Doorenbos in Med. Landb. Wagen., 50, **2**, 27 (1950).

General, on Pelinaíon etc., Nov. 1, 1939, *Platt* 365 ; shady banks amongst stones or in sun on hillsides ; herb 3 ins. high with pink flowers.

Anagallis *L.*

A. arvensis *L.*, Sp. Pl., ed. 1, 148 (1753) ; Rechinger f., Fl. Aegaea, 436 (1943).

Kampiá, April 16-17, 1939, *Platt* 150 ; sunny slopes ; annual 6 ins. high with red flowers.

The specimens are larger flowered than is usual in *A. arvensis* from W. Europe.

A. arvensis *L.* var. **latifolia** (*L.*) *Hayek*, Prodr. Fl. Pen. Balc., **2**, 33 (1928), Rechinger f., Fl. Aegaea, 437 (1943).

A. latifolia *L.*, Sp. Pl., ed. 1, 149 (1753).

The Kámpos ; Kampiá ; Víki, April 1, 1939, *Platt* 56 ; fields and banks, annual herb 2-6 ins. high with gentian-blue flowers.

OLEACEAE

Olea *L.*

O. europaea *L.*, Sp. Pl., ed. 1, 8 (1753) ; Rechinger f., Fl. Aegaea, 562 (1943).

Rocks at Stous Hephtá, May 30, 1940, *Platt* 502 ; shrub 2-15 ft. high with white flowers. Cultivated, May 31, 1940, *Platt* 514.

JASMINUM *L.*

J. HUMILE *L.* ; Rechinger f., Fl. Aegaea, 562 (1943).

Recorded from Chios by *de Candolle*.

APOCYNACEAE

Vinca *L.*

V. major *L.*, Sp. Pl., ed. 1, 209 (1753) ; Rechinger f., Fl. Aegaea, 558 (1943).

The Kámpos and Kampóchora, Febr. 28, 1940, *Platt* 408, herb 1 ft. high with blue flowers.

V. herbacea *Waldst. et Kit.*, Pl. Hung., **1**, 8, t. 9 (1799) ; Rechinger f., Fl. Aegaea, 558 (1943).

Amádhēs, June 4, 1939, *Platt* 566 ; rocky ground ; prostrate herb with violet flowers.

The specimens resemble *V. libanotica* *Zucc.* in having leaves with smooth or almost smooth margins, whereas the leaf-margins in typical *herbacea* are distinctly scabrid. In all other respects the Chian material agrees better with *V. herbacea*, of which *V. libanotica* is, I suspect, scarcely more than a variety.

Nerium L.

N. oleander L., Sp. Pl., ed. 1, 209 (1753) ; Rechinger f., Fl. Aegaea, 559 (1943).

No locality, July 10, 1939, *Platt* 338.

ASCLEPIADACEAE

Cynanchum L.

C. acutum L., Sp. Pl., ed. 1, 212 (1753) ; Rechinger f., Fl. Aegaea, 560 (1943).

Kondári, June 24, 1939, *Platt* 284 ; just above seashore ; perennial creeper with pinkish-white flowers.

C. canescens (Willd.) K. Schum. in Engl. et Prantl, Pflanzenfam., 4, 2, 252 (1895) ; Rechinger f., Fl. Aegaea, 560 (1943).

Asclepias canescens Willd., Nov. Act. Nat. Cur., 3, 418 (1801).

Vincetoxicum canescens (Willd.) Decne. in DC., Prodr., 8, 523 (1844).

Summit of Pelinaíon, July 12, 1939, *Platt* 353 ; perennial herb with prostrate stems and whitish flowers. Amádhēs, Pytiós area, June 5, 1939, *Platt* 582 ; prostrate herb with greenish flowers.

The Pelinaíon specimens cited above (*Platt* 353) differ considerably from the rest of the material (which is $\pm$ typical *C. canescens*) in their very thinly pubescent leaves and subsessile, few-flowered inflorescences. On dissection I fail to detect any important structural difference in the floral morphology, but further evidence may show that this mountain-top plant, if not a distinct species, is at least a well-marked variety of *C. canescens*.

Marsdenia R. Br.

M. erecta (L.) R. Br., Mem. Wern. Soc., 1, 29 (1811) ; Rechinger f., Fl. Aegaea, 560 (1943).

Cynanchum erectum L., Sp. Pl., ed. 1, 213 (1753).

Kardhámyla, June 3, 1939, *Platt* 543 ; above beach ; shrub 18 ins. high with white flowers. Amádhēs, above Kardhámyla, on the way to Pytiós, July 10, 1939, *Platt* 339 ; shrub 1 ft. high with white flowers.

GENTIANACEAE

Blackstonia Huds.

B. perfoliata (L.) Huds., Fl. Anglica, ed. 1, 146 (1762) ; Rechinger f., Fl. Aegaea, 558 (1943).

Gentiana perfoliata L., Sp. Pl., ed. 1, 232 (1753).

Chlora perfoliata (L.) L., Syst. Nat. ed. 12, 2, 267 (1767).

Near Kampiá, May 6, 1939, *Platt* 265 ; moist almost peaty bank in sunny situation ; annual 6 ins. high with yellow flowers.

B. acuminata (Koch et Ziz) Domin in Bull. Int. Acad. Tchèque Sc., 34, 25 (1933).

Chlora acuminata Koch et Ziz, Cat. Pl. Palat., 20 (1814).

Blackstonia serotina (Koch) Beck, Fl. N. Osterr., **2**, 934 (1893).

Chlora serotina Koch in Reichb., Pl. Crit., **3**, 6, t. CCVIII (1825).

Near Kampiá, June 18, 1939, *Platt* 280, moist almost peaty bank amongst *Erica* in a sunny situation.

Not recorded for the Aegean area by Rechinger f. It is likely that *B. perfoliata* and *B. acuminata* grow intermixed in Chios as in other areas ; the latter is readily distinguished by its broad, linear-lanceolate sepals and amplexicaul, but scarcely perfoliate, leaves. The absence of a basal rosette at time of flowering also characterizes the species. The relationship between *B. acuminata* and *B. imperfoliata* (L.f.) is much closer, but I believe *B. imperfoliata* can be distinguished by its erect habit, long, stout peduncled flowers borne sparsely in few flowered cymes, distinctly connate sepals and narrow ovate-lanceolate leaves. *B. imperfoliata* is confined to S. France, Spain and the Western Mediterranean, whereas *B. acuminata* extends from Brittany to the Middle East.

Two specimens of *B. acuminata* accompany one plant of *B. perfoliata* on a duplicate sheet (*Rechinger f.* 14458) from Crete, distr. Chania, "in humidis ad Platanias".

Centaurium Hill

C. spicatum (L.) *Fritsch* ap. Janch. in Mitt. Nat. Ver. Univ. Wien, **5**, 97 (1907) ; *Rechinger f.*, Fl. Aegaea, 556 (1943).

Gentiana spicata L., Sp. Pl., ed. 1, 230 (1753).

Erythraea spicata (L.) Pers., Syn. Pl., 1, 283 (1805).

Inland at Kondári, Mármaro, July 7, 1939, *Platt* 319 ; at sea-level ; annual herb 6-9 ins. high with pink flowers. Without locality, July 14, 1939, *Platt* 348 ; herb 6-10 ins. high with pink flowers.

C. umbellatum Gilib. var. **majus** (*Hoffmsgg. et Link.*) *Ronn.* ap. *Rechinger f.*, Fl. Aegaea, 556 (1943).

Erythraea centaurium Pers. var. *major* (*Hoffmsgg. et Link.*) *Gris.*, Gen. et Spec. *Gentian.*, 140 (1839).

Erythraea major *Hoffmsgg. et Link.*, Fl. Port., 349, t. 65 (1809).

Without precise locality, June 6, 1939, *Platt* 251 ; general from sea-level in sunny places, often among *Cistus* ; herb 6-12 ins. high with pink flowers. Also without locality, June 18, 1939, *Platt* 279.

C. tenuiflorum (*Hoffmsgg. et Link.*) *Fritsch* ap. Janch. in Mitt. Nat. Ver. Univ. Wien, **9**, 97 (1907) ; *Rechinger f.*, Fl. Aegaea, 557 (1943).

Erythraea tenuiflora *Hoffmsgg. et Link.*, Fl. Port., 1, 354 (1809).

Without precise locality, April 30, 1939, *Platt* 182 ; annual 2 ins. high with pink flowers. *Kampóchora*, May 7, 1939, *Platt* 208.

The specimens are young and inadequately developed for certain determination, but, with considerable hesitation, I place them here rather than under *C. pulchellum* (Sw.).

C. maritimum (L.) *Fritsch* ap. Janch. in Mitt. Nat. Ver. Univ. Wien, **5**, 97 (1907) ; *Rechinger f.*, Fl. Aegaea, 558 (1943).

Gentiana maritima L., Mantissa, 55 (1767).



FIG. 9. *Blackstonia acuminata* (Koch et Ziz) Domin. Plant, root and basal leaves, natural size. Sepals, petals and ovary $\times 3$. Stamen $\times 6$.

Erythraea maritima (L.) Pers., Syn. Pl., **1**, 283 (1805).

Near Kampiá, May 6, 1939, *Platt* 264 ; on moist almost peaty bank in sunny situation ; annual 6 ins. high with yellow flowers.

BORAGINACEAE

Heliotropium L.

H. hirsutissimum Grauer in Weber, Pl. Min. Cogn., **1** (1784) ; Rechinger f., Fl. Aegaea, 444 (1943).

General, no precise locality, June 27, 1939, *Platt* 303, cultivated ground ; herb 6–18 ins. high with white flowers.

Cynoglossum L.

C. creticum Mill., Gard. Dict., ed. 8, No. 2 (1768) ; Rechinger f., Fl. Aegaea, 445 (1943).

Kardhámyla, April 11–13, 1939, *Platt* 107 ; shady or sunny cultivated land ; herb 18 ins. high, leaves grey ; flowers lavender-blue.

Borago L.

B. officinalis L., Sp. Pl., ed. 1, 15 (1753) ; Rechinger f., Fl. Aegaea, 446 (1943).

The Kámpos, Febr. 27, 1940, *Platt* 404 ; cultivated ground ; herb 9 ins. high with blue flowers.

Anchusa L.

A. officinalis L., Sp. Pl., ed. 1, 133 (1753) ; Rechinger f., Fl. Aegaea, 448 (1943).

Amádhēs, Pytiós area, June 5, 1939, *Platt* 584 ; herb with blue flowers.

A. italica Retz., Obs., **1**, 12 (1779) ; Rechinger f., Fl. Aegaea, 449 (1943).

Sunny slopes below Amádhēs, April 14–15, 1939, *Platt* 128 ; herb 12–18 ins. high with blue flowers. The Kámpos, May 26, 1940, *Platt* 461 ; cultivated land ; herb 1–2½ ft. high with blue flowers.

NONNEA Med.

N. obtusifolia (Willd.) Roem. & Schult. ; Rechinger f., Fl. Aegaea, 450 (1943).

Recorded from Chios (herb. Willd.)

Alkanna Tausch

A. tinctoria (L.) Tausch in Flora, **7**, 234 (1834) ; Rechinger f., Fl. Aegaea, 451 (1943).

Lithospermum tinctorium L., Sp. Pl., ed. 1, 132 (1753).

Kampóchora, the Kámpos, March 24–28, 1939, *Platt* 5. Kampóchora, April 9, 1939, *Platt* 65, steep sunny slopes in heavy clay-like soil ; herb with sprawling habit and blue flowers.

All the specimens cited above have larger flowers than is usual in *A. tinctoria*, and may merit varietal differentiation. The material is immature, however, and it is possible that the larger flowers have a seasonal, rather than a taxonomic, significance.

Myosotis L.

M. idaea Boiss. et Heldr. in Boiss., *Diagn.*, 1, **11**, 121 (1849) ; Rechinger f., *Fl. Aegaea*, 453 (1943).

Kampiá, April 16–17, 1939, *Platt* 139 ; hot sunny slope below village ; herb 2–3 ins. high with blue flowers.

M. IDAEA Boiss. et Heldr. [var. *BOEOTICA* Reut. ; Rechinger f., *Fl. Aegaea*, 453 (1943).

Mt. Aepos, *Orphanides*.

M. COLLINA Hoffm. ; Rechinger f., *Fl. Aegaea*, 453 (1943).

Recorded from Chios by *Orphanides*.

Lithospermum L.

L. arvense L., *Sp. Pl.*, ed. 1, 182 (1753) ; Rechinger f., *Fl. Aegaea*, 455 (1943).

Without locality or date, *Platt* s.n.

L. incrassatum Guss., *Fl. Sic. Prodr.*, **1**, 211 (1827) ; Rechinger f., *Fl. Aegaea*, 455 (1943).

Without locality or date, *Platt* s.n.

L. apulum (L.) Vahl, *Symb. Bot.*, **2**, 33 (1791) ; Rechinger f., *Fl. Aegaea*, 455 (1943).

Myosotis apula L., *Sp. Pl.*, ed. 1, 131 (1753).

Kardhámyla, April 11–13, 1939 ; sunny open hillside ; annual 3 ins. high with yellow flowers.

Echium L.

E. italicum L., *Sp. Pl.*, ed. 1, 139 (1753) ; Rechinger f., *Fl. Aegaea*, 458 (1943).

The Kámpos, June 12, 1939, *Platt* 276 ; on pathsides and rough ground, general ; herb 2 ft. high with mauve-blue flowers.

E. plantagineum L., *Mantissa Altera*, 202 (1771) ; Rechinger f., *Fl. Aegaea*, 459 (1943).

Spartoúnta and the Kámpos, general, April 2, 1939, *Platt* 61 ; biennial herb 1 ft. high with purple-blue flowers. Spartoúnta, April 18–19, 1939, *Platt* 160 ; sunny hillside ; herb 1 ft. high with purple, pink or blue flowers.

E. elegans *Lehm.*, *Asperif.*, 459 (1818) ; Halacsy, *Consp. Fl. Graec.*, **2**, 338 (1902).

E. diffusum Sibth. et Sm. var. *hispidum* (Sibth. et Sm.) Hayek, *Prodr. Fl. Pen. Balc.*, **2**, 94 (1928) ; Rechinger f., *Fl. Aegaea*, 459 (1943).

The Kámpos, May 20, 1940, *Platt* 445 ; roadside banks ; "spreading herb with crimson flowers." (?do these notes relate to *E. elegans*).

Onosma *L.*

O. pallidum *Boiss.*, *Diagn.*, **1**, **11**, 112 (1849) ; Rechinger f., *Fl. Aegaea*, 456 (1943).

Kardhámyla, April 13, 1939, *Platt* 88 ; rocks and dry slopes ; herb 6 ins. high with white flowers. Very common throughout island.

O. graecum *Boiss.*, *Diagn.*, **1**, **11**, 106 (1849) ; Rechinger f., *Fl. Aegaea*, 457 (1943).

Kardhámyla, April 11–13, 1939, *Platt* 104 ; poor stony soil ; herb 1 ft. high with yellow flowers.

Cerinthe *L.*

C. major *L.*, *Sp. Pl.*, ed. 1, 136 (1758) ; Rechinger f., *Fl. Aegaea*, 457 (1943).

Kampóchora, 1939, *Platt* 26 ; herb 6–15 ins. high ; corolla with upper half yellow, lower half brown.

CONVOLVULACEAE

Convolvulus *L.*

C. scammonia *L.*, *Sp. Pl.*, ed. 1, 153 (1753) ; Rechinger f., *Fl. Aegaea*, 439 (1943).

Amádhēs, June 1, 1939, *Platt* 238 ; stony banks of wheat fields, on very poor soil ; perennial herb with white flowers, creeping and climbing through *Acer sp.* Amádhēs, July 11, 1939, *Platt* 341 ; cornfields ; creeping herb with white flowers.

C. arvensis *L.*, *Sp. Pl.*, ed. 1, 153 (1753) ; Rechinger f., *Fl. Aegaea*, 440 (1943).

The Kámpos, July 17, 1939, *Platt* 363 ; in fields ; creeping herb with white flowers.

C. hirsutus *Stev.* in *M. Bieb.*, *Fl. Taur.-Cauc.*, **1**, 422 (1808) ; Rechinger f., *Fl. Aegaea*, 440 (1943).

No precise locality, May 28, 1940, *Platt* 483 ; edge of roads and in cornfields ; prostrate or climbing herb, flowers white with a mauve base.

C. hirsutus *Stev.* in *M. Bieb.* var. **sibthorpii** (*Roem. et Schult.*) *Hal.*, *Consp. Fl. Graec.*, **2**, 308 (1902) ; Rechinger f., *Fl. Aegaea*, 440 (1943).

C. sibthorpii Roem. et Schult., Syst. Veg., **4**, 285 (1819).

General throughout island, May 6, 1939, *Platt* 256 ; climbing or creeping over cultivated ground.

C. elegantissimus Mill., Gard. Dict., ed. 8, 22 (1768); Rechinger f., Fl. Aegaea, 440 (1943).

Amádhēs and general throughout the island, April 11–13, 1939, *Platt* 86 ; stony ground in sun ; creeping herb with pink flowers, sometimes growing through *Poterium*.

CRESSA L.

C. CRETICA L. ; Rechinger f., Fl. Aegaea, 441 (1943).

Recorded from Chios by *Pauli*.

SOLANACEAE

Solanum L.

S. nigrum L., Sp. Pl., ed. 1, 186 (1753) ; Rechinger f., Fl. Aegaea, 463 (1943).

The Kámpos, Febr. 15, 1940, *Platt* 397 ; cultivated ground ; herb with white flowers and black fruit. The Kámpos, May 31, 1940, *Platt* 512 ; cultivated ground ; herb 1 ft. high with white flowers.

Hyoscyamus L.

H. albus L., Sp. Pl., ed. 1, 180 (1753) ; Rechinger f., Fl. Aegaea, 461 (1943).

Without locality, May 1, 1939, *Platt* 192 ; the Kámpos, Sept. 26, 1939, *Platt* 609 ; cultivated ground ; weed 6–18 ins. high with pale yellow flowers.

SCROPHULARIACEAE

Verbascum L.

V. glomeratum Boiss., Diagn., 1, **4**, 52 (1844) ; Rechinger f., Fl. Aegaea, 467 (1943).

Nea Moní, May 4, 1939, *Platt* 202 ; herb 2–3 ft. high ; foliage yellowish, flowers yellow. Amádhēs, June 4, 1939, *Platt* 550 ; on rocky ground ; herb 2–3 ft. high with yellow flowers.

V. lasianthum Boiss. ap. Benth. in DC., Prodr., **10**, 234 (1846) ; Rechinger f., Fl. Aegaea, 468 (1943).

Without locality, June 27, 1939, *Platt* 298. Amádhēs, July 11, 1939, *Platt* 342 ; stony places ; herb 2½ ft. high with yellow flowers.

V. sinuatum L., Sp. Pl., ed. 1, 178 (1753) ; Rechinger f., Fl. Aegaea, 469 (1943).

The Kámpos, Sept. 26, 1939, *Platt* 603 ; rough ground ; herb 3–4 ft. high with small yellow flowers.

Linaria Hill

L. LONGIPES *Boiss. et Heldr.* ; Rechinger f., Fl. Aegaea, 474 (1943).

Collected in Chios by *Aucher-Eloy* (no. 1905).

L. sieberi *Reichb.*, Fl., Germ. Exc., 374 (1832).

Kickxia sieberi (Reichb.) Dörf., Sched. Herb. Norm. 4915 (1908) ;
Rechinger f., Fl. Aegaea 476 (1943).

The Kámpos, Sept. 26, 1939, *Platt* 598 ; banks and river-bed ; prostrate creeper with mauve and white flowers.

Antirrhinum L.

A. orontium *L.*, Sp. Pl., ed. 1, 617 (1753) ; Rechinger f., Fl. Aegaea, 472 (1943).

Kampiá, April 16-17, 1939, *Platt* 140 ; dry slopes ; herb 9 ins. high with narrow lanceolate, opposite leaves and pinkish flowers. The Kámpos, May 26, 1940, *Platt* 459 ; cultivated land ; herb 3-10 ins. high with mauve flowers.

Scrophularia L.

S. HETEROPHYLLA *Willd.* ; Rechinger f., Fl. Aegaea, 479 (1943).

Recorded by *Heldreich* and *Orphanides* (728).

S. HETEROPHYLLA *Willd.* var. *URVILLEANA* (*Wydł.*) *Weiss* ; Rechinger f., Fl. Aegaea, 479 (1943).

Mt. Plaka, 600 m. alt., *Rechinger f.* 5410.

S. canina *L.*, Sp. Pl., ed. 1, 621 (1753) ; Rechinger f., Fl. Aegaea, 480 (1943).

The Kámpos, May 26, 1940, *Platt* 456 ; banks and river-beds ; herb 1½ ft. high with maroon flowers.

S. CANINA *L.* ssp. *FLORIBUNDA* (*Boiss. et Bal.*) *Rechinger f.*, Fl. Aegaea, 480 (1943).

Mt. Plaka, 700 m. alt., *Rechinger f.* 5394.

Veronica L.

V. chamaepitys *Gris.*, Spic. Fl. Rum. et Bith., 2, 15 (1844) ; Rechinger f., Fl. Aegaea, 482 (1943).

Without locality or date, *Platt* s.n.

V. polita *Fr.*, Nov. Fl. Suec, ed. 1, 4, 63 (1828) ; Rechinger f., Fl. Aegaea, 482 (1943).

The Kámpos, Febr. 14, 1940, *Platt* 382 ; banks and cultivated land ; annual ¼ in. high with blue flowers.

V. cymbalaria *Bodard*, Diss., 3 (1798) ; Rechinger f., Fl. Aegaea, 482 (1943).

The Kámpos, Feb. 14, 1940, *Platt* 384 ; banks and cultivated land ; annual 3-15 ins. high with white flowers.

V. anagallis-aquatica L., Sp. Pl., ed. 1, 12 (1753); Rechinger f., Fl. Aegaea, 484 (1943).

Road to Sklaviá, May 29, 1930, *Platt* 489 ; in ditch ; herb 1½ ft. high with blue flowers.

Parentucellia Viv.

P. viscosa (L.) Car. in Parl., Fl. Ital., 6, 482 (1886) ; Rechinger f., Fl. Aegaea, 486 (1943).

Bartsia viscosa L., Sp. Pl., ed. 1, 602 (1753).

Kampiá, May 26, 1939, *Platt* 275 ; moist conditions ; annual 4–9 ins. high with yellow flowers. Below Pytiós, June 5, 1939, *Platt* 586 ; herb 3–9 ins. high with yellow flowers.

P. latifolia (L.) Car. in Parl., Fl. Ital., 6, 480 (1886) ; Rechinger f., Fl. Aegaea, 486 (1943).

Euphrasia latifolia L., Sp. Pl., ed. 1, 604 (1753).

Kampiá, April 16–17, 1939, *Platt* 144 ; dry slopes ; viscid annual 2 ins. high with purple flowers.

Bellardia All.

B. trixago (L.) All., Fl. Ped., 1, 61 (1785) ; Rechinger f., Fl. Aegaea, 485 (1943).

Bartsia trixago L., Sp. Pl., ed. 1, 602 (1753).

Mastichóchora, May 1, 1939, *Platt* 195 ; annual 1–1½ ft. high with pink and white flowers.

OROBANCHACEAE

Orobanche L.

O. SCHULTZII Muell. ; Rechinger f., Fl. Aegaea, 489 (1943).

Collected in Chios by Pauli.

O. crenata Forsk., Fl. Aegypt.-Arab., 113 (1775) ; Rechinger f., Fl. Aegaea, 490 (1943).

Kampóchora, April 11–13, 1939, *Platt* 75 ; generally in cultivated land ; parasitic herb 6–12 ins. high with mauve-pink flowers.

VERBENACEAE

Phyla Lour.

P. nodiflora (L.) Greene in Pittonia, 4, 46 (1899).

Verbena nodiflora L., Sp. Pl., ed. 1, 20 (1753).

Lippia nodiflora (L.) Michx., Fl. Amer. Bor., 2, 15 (1803) ; Rechinger f., Fl. Aegaea, 492 (1943).

The Kámpos, June 2, 1940, *Platt* 625 ; pathside and river-bed ; prostrate herb forming a carpet of stems and leaves, flowers mauve.

Verbena L.

- V. officinalis** L., Sp. Pl., ed. 1, 20 (1753); Rechinger f., Fl. Aegaea, 492 (1943).

The Kámpos, Sept. 26, 1939, *Platt* 611; cultivated ground; weedy herb 6–12 ins. high with blue flowers.

Vitex L.

- V. agnus-castus** L., Sp. Pl., ed. 1, 638 (1753); Rechinger f., Fl. Aegaea, 492 (1943).

General, July 10, 1939, *Platt* 336; shrub 4–15 ft. high with blue, mauve or pink flowers.

LABIATAE

Lavandula L.

- L. stoechas** L., Sp. Pl., ed. 1, 573 (1763); Rechinger f., Fl. Aegaea, 505 (1943).

Kardhámyla, April 11–13, 1939, *Platt* 84; with *Cistus* on rocky slopes.

Mentha L.

- M. longifolia** (L.) Huds. var. **velutina** Petrak in Rechinger f., Fl. Aegaea, 544 (1943).

Pelinaíon, July 12, 1939, *Platt* 351; in stream; herb 3 ft. high with mauve flowers.

- M. pulegium** L. var. **hirsuta** Guss., Fl. Sic., 2, 91 (1828); Rechinger f., Fl. Aegaea, 547 (1943).

Pelinaíon; Mármaro, July 14, 1939, *Platt* 346; in low-lying or moist places by stream; herb 2½ ft. high with pinkish-mauve flowers.

Origanum L.

- O. onites** L., Sp. Pl., ed. 1, 590 (1753).

Marjorana onites (L.) Benth., Lab., 339 (1834); Rechinger f., Fl. Aegaea, 532 (1943).

Throughout the island, May 30, 1939, *Platt* 228; on rocks or rocky places; herb 9 ins. high with white flowers.

Thymus L.

- T. zygoides** Gris., Spic., 2, 118 (1844); Rechinger f., Fl. Aegaea, 540 (1943).

Without locality or date, *Platt* s.n.

- T. sipyleus** Boiss. var. **imbricatus** (Cel.) Ronn. in Rechinger f., Fl. Aegaea, 540 (1943).

T. imbricatus Cel. in Flora, 67, 535 (1884).

Summit of Pelinaíon, July 9, 1939, *Platt* 332; prostrate over stones; herb with woody base and white or pink flowers.

Coridothymus Reichb. f.

C. capitatus (L.) Reichb. f. in Oster. Bot. Wordenbl., **7**, 161 (1857); Rechinger f., Fl. Aegaea, 533 (1943).

Satureia capitata L., Sp. Pl., ed. 1, 568 (1753).

Thymus capitatus (L.) Hoffing. et Link, Fl. Port., **1**, 123 (1809).

Parpariá, June 8, 1939, *Platt* 247 ; general throughout island from sea-level to hillsides; shrublet 6–18 ins. high with mauve, pink, purple or white flowers.

Satureia L.

S. thymbra L., Sp. Pl., ed. 1, 567 (1753) ; Rechinger f., Fl. Aegaea, 523 (1943).

Amádhēs, May 28, 1939, *Platt* 220 ; sunny slopes ; herb 1 ft. high with mauve flowers.

Micromeria Benth.

M. juliana (L.) Benth., Lab., 373 (1834) ; Rechinger f., Fl. Aegaea, 525 (1943).

Satureia juliana L., Sp. Pl., ed. 1, 567 (1753).

Amádhēs area, July 9, 1939, *Platt* 333 ; amongst rocks and stones ; 3–6 ins. high with mauve flowers. Amádhēs, June 4, 1939, *Platt* 545 ; on rocks ; herb 6 ins. high with mauve-pink flowers.

Thymbra L.

T. spicata L., Sp. Pl., ed. 1, 569 (1753) ; Rechinger f., Fl. Aegaea, 530 (1943).

The Kámpos ; Haghiós Geórgios Sykoúsis, June 27, 1939, *Platt* 299 ; on sunny stony places ; shrub 6–9 ins. high with purple flowers.

Calamintha Adans.

C. alpina (L.) Lam. ssp. **aetnensis** (Strobl) Rech. f., Fl. Aegaea, 528 (1943).

C. aetnensis Strobl, Osterr. Bot. Zeitschr., **24**, 29 (1874).

Amádhēs, slopes of Pelinaíon, June 5, 1939, *Platt* 248 ; sunny banks ; prostrate herb with mauve-blue flowers. Amádhēs, Pelinaíon, July 8, 1939, *Platt* 321 ; sunny banks ; prostrate herb with mauve flowers. Pytiós area, June 5, 1939, *Platt* 583 ; prostrate herb with white flowers.

C. incana (Sibth. et Sm.) Boiss. ex Benth. in DC., Prodr., **12**, 226 (1848) ; Rechinger f., Fl. Aegaea, 528 (1943).

Thymus incanus Sibth. et Sm., Fl. Graec. Prodr., **1**, 421 (1806).

The Kámpos, Sept. 26, 1939, *Platt* 605 ; roadside and dry banks ; trailing herb with mauve flowers.

C. exigua (Sibth. et Sm.) Hal., Consp. Fl. Graec., **2**, 546 (1902) ; Rechinger f., Fl. Aegaea, 530 (1943).

Thymus exiguus Sibth. et Sm., Fl. Graec. Prodr., **1**, 421 (1806).

Kardhámyla, April 11–13, 1939, *Platt* 95 ; poor sunny slopes ; sub-shrub 18 ins. high with mauve flowers.

Melissa L.

M. officinalis L., Sp. Pl., ed. 1, 592 (1753) ; Rechinger f., Fl. Aegaea, 522 (1943).

Mármaro, July 14, 1939, *Platt* 347 ; cultivated ground in low-lying areas ; herb 3 ft. high with white flowers.

Salvia L.

S. triloba L.f., Suppl. Pl., 88 (1781) ; Rechinger f., Fl. Aegaea, 519 (1943).

Haghios Geórgios Sykoúsis, March 29, 1939, *Platt* 51 ; steep rocky slopes in sun ; shrub 12–18 ins. high with pale pinkish-mauve flowers.

S. verbenaca L. var. **vernalis** Boiss., Voy. Bot. Esp., 484 (1841).

S. clandestina L., Sp. Pl., ed. 2, 36 (1762).

S. verbenaca L., ssp. *clandestina* (L.) Briq., Lab. Alp. Mar., 515 (1891) ; Rechinger f., Fl. Aegaea, 520 (1943).

The Kámpos, 1939, *Platt* 31 ; hillsides throughout the island ; herb with basal rosette, 12 ins. high ; flowers lavender-blue, few opening together.

S. virgata Jacq., Hort. Vindob., 1, 14, t.37 (1770) ; Rechinger f., Fl. Aegaea, 1522 (1943).

Kampóchora, July 17, 1939, *Platt* 361 ; in sun, general ; herb 1½ ft. high with purple flowers. Amádhēs, Pytiós area, June 5, 1939, *Platt* 587 ; herb 2–3 ft. high with purple flowers.

Rosmarinus L.

R. officinalis L., Sp. Pl., ed. 1, 23 (1753) ; Rechinger f., Fl. Aegaea, 501 (1943).

Without locality, Febr. 22, 1940, *Platt* 407 ; shrub 5 ft. high with mauve flowers.

Prunella L.

P. laciniata (L.) L., Sp. Pl., ed. 2, 837 (1763) ; Rechinger f., Fl. Aegaea, 509 (1943).

P. vulgaris L. var. *laciniata* L., Sp. Pl., ed. 1, 600 (1753).

Near Kampiá, May 6, 1939, *Platt* 263 ; moist, almost peaty bank in sun amongst *Erica* ; herb 3 ins. high ; flowers yellow.

The collector's notes seem to refer to another plant, since *P. laciniata* normally has white, not yellow flowers.

Sideritis L.

S. curvidens Stapf in Denkschr. Math.-Nat. Kl. Akad. Wiss. Wien, 50, 100 (1881) ; Rechinger f., Fl. Aegaea, 507 (1943).

Stous Hephtá, May 30, 1940, *Platt* 503 ; rocky ground ; herb 2–4 ins. high with white flowers.

S. SIPYLEA Boiss. ; Rechinger f., Fl. Aegaea, 507 (1943).

Mt. Plaka, 1000 m., alt., *Rechinger f.* 5369.

Marrubium L.

M. vulgare L., Sp. Pl., ed. 1, 583 (1753) ; Rechinger f., Fl. Aegaea, 505 (1943).

Amádhēs, May 28, 1939, *Platt* 221 ; poor, dry places ; herb 2 ft. high with white flowers.

Stachys L.

S. cretica L., Sp. Pl., ed. 1, 581 (1753) ; Rechinger f., Fl. Aegaea, 515 (1943).

Amádhēs, May 31, 1939, *Platt* 232 ; stony ground throughout island ; perennial 1 ft. high with mauve flowers. Haghios Constantinos, June 2, 1940, *Platt* 523 ; rocky ground ; herb 3-9 ins. high with mauve flowers.

S. CRETICA L. ssp. *SMYRNAEA* Rechinger f., Fl. Aegaea, 515 (1943).

Tourloti, *Orphanides* 3745 ; hill west of the town, *Rechinger f.* 5341, 5348.

Lamium L.

L. MOSCHATUM Mill. ; Rechinger f., Fl. Aegaea, 511 (1943).

Recorded from Chios, *Aucher-Eloy* 1686.

L. amplexicaule L., Sp. Pl., ed. 1, 579 (1753) ; Rechinger f., Fl. Aegaea, 512 (1943).

The Kámpos and throughout island, Febr. 7, 1939, *Platt* 18 ; walls, banks and cultivated ground ; prostrate herb with crimson-purple flowers.

The flowers on all but two of the specimens examined are much larger than is usual in European *L. amplexicaule*, though otherwise the plants are fairly typical. It seems likely that this species, in common with several annual weeds, tends to produce large flowers at the beginning and end of its flowering season ; for this reason I have refrained from giving status to the Chian variant. None of the material seen is cleistogamous.

Ballota L.

B. acetabulosa (L.) Benth., Lab., 595 (1834) ; Rechinger f., Fl. Aegaea, 513 (1943).

Marrubium acetabulosum L., Sp. Pl., ed. 1, 584 (1753).

Throughout the island, May 30, 1939, *Platt* 230 ; rocks and stony places ; herb 1 ft. high with purple flowers.

Prasium L.

P. majus L., Sp. Pl., ed. 1, 601 (1753) ; Rechinger f., Fl. Aegaea, 501 (1943).

Kampóchora, April 9, 1939, *Platt* 71 ; shrub 2 ft. high with white flowers.

Teucrium L.

- T. divaricatum** Sieb., Avis, **4**, 5 (1821); Halacsy, Consp. F. Graec., **2**, 474 (1902).

Throughout island, May 30, 1939, *Platt* 229 ; rocks and sunny slopes ; weedy perennial 6 ins. high with crimson flowers.

- T. DIVARICATUM* Sieb. ssp. *VILLOSUM* (Cel.) Rechinger f., Fl. Aegaea, 498 (1943).

Recorded from Chios by *Pauli*.

- T. polium** L., Sp. Pl., ed. 1, 566 (1753) ; Rechinger f., Fl. Aegaea, 500 (1943).

Throughout island, June 26, 1939, *Platt* 291 ; rocks ; stony places and hillsides ; shrublet 6-9 ins. high, bushy ; flowers pale yellow.

Ajuga L.

- A. orientalis** L., Sp. Pl., ed. 1, 561 (1753) ; Rechinger f., Fl. Aegaea, (1943).

Amádhēs, Pytiós area, June 5, 1939, *Platt* 575 ; rocky ground ; herb 9 ins. high with purple flowers.

- A. CHIA* (Poir.) Schreb. ; Rechinger f., Fl. Aegaea, 494 (1943).

Originally described from Chian material by *Tournefort*.

PLANTAGINACEAE

Plantago L.

- P. psyllium** L., Sp. Pl., ed. 2, 167 (1763) ; Rechinger f., Fl. Aegaea, 549 (1943).

Haghios Constantinos, May 27, 1940, *Platt* 477 ; edge of cultivated ground ; herb 3-7 ins. high with greenish flowers.

- P. lanceolata** L., Sp. Pl., ed. 1, 113 (1753) ; Rechinger f., Fl. Aegaea, 550 (1943).

Sklaviá, May 29, 1940, *Platt* 492 ; roadside ; herb 18-24 ins. high.

- P. lagopus** L., Sp. Pl., ed. 1, 114 (1753) ; Rechinger f., Fl. Aegaea, 551 (1943).

Amádhēs, April 14-15, 1939, *Platt* 130 ; stony ground just above sea-level ; herb 2-4 ins. high.

- P. lagopus** L. var. **cylindrica** Boiss., Voy. Bot. Esp., **2**, 536 (1841) ; Rechinger f., Fl. Aegaea, 551 (1943).

Kardhámyla, April 11-13, 1939, *Platt* 106 ; pathside above the sea ; herb 6 ins. high.

- P. albicans** L., Sp. Pl., ed. 1, 114 (1753) ; Rechinger f., Fl. Aegaea, 552 (1943).

Haghios Constantinos, May 27, 1940, *Platt* 469 ; above road and on edge of cornfields ; herb 10 ins. high.



FIG. 10. *Teucrium divaricatum* Sieb. Plant, natural size. Leaf $\times 2$. Floral analysis $\times 3$.

P. cretica L., Sp. Pl., ed. 1, 114 (1753) ; Rechinger f., Fl. Aegaea, 553 (1943).

Without precise locality, May 2, 1939, *Platt* 198 ; dry places, herb $\frac{1}{2}$ in. high.

P. coronopus L., Sp. Pl., ed. 1, 115 (1753) ; Rechinger f., Fl. Aegaea, 553 (1943).

The Kámpos, May 26, 1940, *Platt* 462 ; path and roadside, green prostrate herb.

ILLECEBRACEAE

Paronychia Mill.

P. chionaea Boiss., Diagn., 1, 3, 9 (1843) ; Rechinger f., Fl. Aegaea, 131 (1943).

Summit of Pelinaíon, May 28, 1939, *Platt* 225 ; prostrate over stones ; perennial herb with white papery bracts.

P. CAPITATA (L.) Lam. ; Rechinger f., Fl. Aegaea, 130 (1943).

Mt. Plaka, 1000 m. alt., *Rechinger f.*, 5372.

Scleranthus L.

S. neglectus Roch. in Baumg., Enum. Stirp. Transs., 3, 345 (1816) ; Rechinger f., Fl. Aegaea, 134 (1943).

Amádhēs, Pytiós area, June 5, 1939, *Platt* 579 ; rocky ground ; herb 1 in. high with white flowers.

AMARANTACEAE

Amaranthus L.

A. retroflexus L., Sp. Pl., ed. 1, 991 (1753) ; Rechinger f., Fl. Aegaea, 125 (1943).

The Kámpos, Sept. 26, 1939, *Platt* 610 ; banks and rough ground ; annual 2-2 $\frac{1}{2}$ ft. high with white flowers.

CHENOPODIACEAE

Chenopodium L. (det. J. P. M. Brenan)

C. opulifolium Schrad. in Koch et Ziz, Cat. Palat., 6 (1814) ; Rechinger f., Fl. Aegaea, 120 (1943).

The Kámpos, Sept. 26, 1939, *Platt* 596 ; river-bed and rough ground ; herb 9-15 ins. high with yellowish-white flowers.

Beta L.

B. maritima L., Sp. Pl., ed. 2, 322 (1763) ; Rechinger f., Fl. Aegaea, 118 (1943).

The Kámpos, May 31, 1940, *Platt* 515 ; cultivated land.

POLYGONACEAE

Atraphaxis L.

A. billardieri Jaub. et Spach, Ill. Pl. Or., **2**, 14, t. 111 (1844) ; Rechinger f., Fl. Aegaea, 106 (1943).

Pelinaíon, May 28, 1939, *Platt* 218 ; slopes facing south ; shrub 2½ ft. high with pink flowers.

Polygonum L.

P. aviculare L., Sp. Pl., ed. 1, 362 (1753) *sens. lat.* ; Rechinger f., Fl. Aegaea, 107 (1943).

Without locality or date, *Platt* s.n.

Rumex L.

R. tuberosus L., Sp. Pl., ed. 2, 481 (1762) ; Boiss., Fl. Or., **4**, 1017 (1879).

R. creticus Boiss., Diagn., 1, **12**, 102 (1842) ; Rechinger f., Fl. Aegaea, 103 (1943).

Kardhámyla, April 11–13, 1939, *Platt* 92 ; sunny vineyards ; herb 1 ft. high.

The nomenclature in Fl. Aegaea is puzzling ; the name *R. creticus* Boiss. is substituted for the earlier *R. tuberosus* L., though the latter is cited as a synonym.

R. PULCHER L. ssp. **DIVARICATUS** (L.). *Murb.* ; Rechinger f., Fl. Aegaea, 104 (1943).

Hill west of town, *Rechinger f.* 5330.

R. bucephalophorus L. var. **graecus** Steinh. in Ann. Sc. Nat., ser. 2, **9**, 201 (1938).

R. bucephalophorus L. ssp. *graecus* (Steinh.) Rechinger f. in Bot. Notiser, 492 (1939).

Kardhámyla, April 11–13, 1939, *Platt* 80 ; banks amongst grass.

R. BUCEPHALOPHORUS L. ssp. **AEGAEUS** Rechinger f. in Bot. Notiser, 495 (1939) ; Fl. Aegaea, 105 (1943).

Collected in Chios by *Pauli* (no. 354).

ARISTOLOCHIACEAE

Aristolochia L.

A. TOURNEFORTII *Jaub. et Spach* ; Rechinger f., Fl. Aegaea, 175 (1943).

Mt. Aepos above Vrontado, *Orphanides* ; Mt. Plaka, 1000 m. alt., *Rechinger f.* 5405.

A. hirta L., Sp. Pl., ed. 1, 961 (1753) ; Rechinger f., Fl. Aegaea, 175 (1943).

Kallimasiá, April 9, 1939, *Platt* 67 ; cornfields and rough ground throughout island, but never in profusion ; herb 1 ft. high with brown foetid flowers.

RAFFLESIACEAE

Cytinus L.

C. hypocistis (L.) L., Syst. Nat., ed. 12, **2**, 602 (1767) ; Reehinger f., Fl. Aegaea, 175 (1943).

Asarum hypocistis L., Sp. Pl., ed. 1, 442 (1753).

Kardhamyla Marmaro, April 13, 1939, *Platt* 102 ; open, dry hillside ; herb 1 in. high with red and white flowers, apparently parasitic on *Cistus* roots.

THYMELAEACEAE

Thymelaea Endl.

T. tartonraira (L.) All. ; Reehinger f., Fl. Aegaea, 391 (1943).

Recorded from Chios by *Aucher-Eloy*.

T. argentea (Sibth. et Sm.) Endl. ; Reehinger f., Fl. Aegaea, 391 (1943).

Recorded from Chios by *Aucher-Eloy*.

ELAEAGNACEAE

Elaeagnus L.

E. angustifolia L., Sp. Pl., ed. 1, 121 (1753) ; Reehinger f., Fl. Aegaea, 393 (1943).

Kardhamyla Marmaro, May 26, 1939, *Platt* 273 ; a tree.

SANTALACEAE

Thesium L.

T. bergeri Zucc., Pl. Nov., **2**, 16 (1837) ; Reehinger f., Fl. Aegaea, 100 (1943).

Without locality or date, *Platt* s.n.

Osyris L.

O. alba L., Sp. Pl., ed. 1, 1022 (1753) ; Reehinger f., Fl. Aegaea, 100 (1943).

Without precise locality, May 1, 1939, *Platt* 185 ; dry banks ; shrub 2 ft. high.

EUPHORBIACEAE

Euphorbia L.

E. apios L., Sp. Pl., ed. 1, 457 (1753) ; Reehinger f., Fl. Aegaea, 114 (1943).

Kardhamyla, March 6, 1940, *Platt* 116 ; on schistose hillside ; prostrate herb.

E. cybirensis Boiss., var. *longifolia* Boiss. ; Reehinger f., Fl. Aegaea, 114 (1943).

Recorded from Chios by *Olivier*.

E. helioscopia L., Sp. Pl., ed. 1, 459 (1753) ; Rechinger f., Fl. Aegaea, 114 (1943).

The Kámpos, Febr. 7, 1939, *Platt* 17 ; annual 4–12 ins. high occasionally branching at base.

E. veneta Willd. var. **sibthorpii** (Boiss.) Hay., Prodr. Fl. Pen. Balc., 1, 129 (1924).

E. sibthorpii Boiss., Cent. Euph., 39 (1860).

Without locality or date, *Platt* s.n.

E. paralias L., Sp. Pl., ed. 1, 458 (1753) ; Rechinger f., Fl. Aegaea, 115 (1943).

Kondári, July 19, 1939, *Platt* 317 ; on seashore ; herb 1–1½ ft. high with green flowers.

E. herniariifolia Willd., Sp. Pl., 2, 902 (1800) ; Rechinger f., Fl. Aegaea, 115 (1943).

Pelinaíon, May 28, 1939, *Platt* 224a ; on summit ; herb 3 ins. high.

? **E. graeca** Boiss. et Spr. in Boiss., Diagn., 1, 5, 53 (1844) ; Rechinger f., Fl. Aegaea, 116 (1943).

Near summit of Pelinaíon, May 28, 1939, *Platt* 224 ; perennial herb 3 ins. high, growing in shady places.

The specimens are too immature for precise determination.

E. peplus L., Sp. Pl., ed. 1, 456 (1753) ; Rechinger f., Fl. Aegaea, 116 (1943).

The Kámpos, Febr. 7, 1939, *Platt* 16 ; branched annual 6 ins. high with small flowers.

E. aleppica L., Sp. Pl., ed. 1, 458 (1753) ; Rechinger f., Fl. Aegaea, 117 (1943).

The Kámpos, June 27, 1939, *Platt* 296 ; cultivated ground ; herb 1 ft. high with green flowers.

E. peplis L., Sp. Pl., ed. 1, 455 (1753) ; Rechinger f., Fl. Aegaea, 117 (1943).

Amádhēs, July 10, 1939, *Platt* 335 ; cultivated ground above beach ; annual 3 ins. high.

E. chamaesyce L., Sp. Pl., ed. 1, 455 (1753) ; Rechinger f., Fl. Aegaea, 117 (1943).

Without locality or date, *Platt* s.n.

Chrozophora Neck.

C. tinctoria (L.) Raf., Chlor. Aetn., 4 (1813) ; Rechinger f., Fl. Aegaea, 109 (1943).

Croton tinctoria L., Sp. Pl., ed. 1, 1004 (1753).

Amádhēs area, July 10, 1939, *Platt* 337 ; cultivated ground ; annual 6–9 ins. high with yellow flowers.

Mercurialis L.

M. annua L., Sp. Pl., ed. 1, 1035 (1753) ; Rechinger f., Fl. Aegaea, 110 (1943).

The Kámpos, Febr. 7, 1940, *Platt* 375 ; cultivated ground ; annual 9–12 ins. high with white flowers.

ANDRACHNE L.

A. TELEPHIOIDES L. ; Rechinger f., Fl. Aegaea, 118 (1943).

Recorded from Chios by *Pauli*.

URTICACEAE

Urtica L.

U. membranacea Poir. in Lam., Encycl., 4, 638 (1797) ; Rechinger f., Fl. Aegaea, 97 (1943).

The Kámpos, Febr. 15, 1940, *Platt* 392 ; cultivated ground ; herb 6–18 ins. high.

Parietaria L.

P. LUSITANICA L. ; Rechinger f., Fl. Aegaea, 99 (1943).

Recorded from Chios by *Orphanides*.

P. diffusa Mert. et Koch. in Rohlings Deutschlands Flora, ed. 2, I, 827 (1823).

P. vulgaris Hill, Brit. Herb., 491 (1756) ; Rechinger f., Fl. Aegaea, 99 (1943) : *nomen illegitimum*.

P. ramiflora auct. non Moench, Meth., 327 (1794).

The Kámpos, Febr. 15, 1940, *Platt* 393 ; walls and cultivated land ; herb 18 ins. high.

FAGACEAE

Quercus L.

Q. BRACHYPHYLLA Kotschy ; Rechinger f., Fl. Aegaea, 90 (1943).

Collected in Chios by *Pauli*.

Q. PUBESCENS Willd. ssp. *ANATOLICA* O. Schwarz ; Rechinger f., Fl. Aegaea, 91 (1943).

Recorded from Chios by *Heldreich*.

Q. coccifera L., Sp. Pl., ed. 1, 995 (1753) ; Rechinger f., Fl. Aegaea, 93 (1943).

Kardhámyla, April 11–13, 1939, *Platt* 100 ; very variable, sometimes a small tree, 20 ft. high, other forms scarcely 1 ft. high ; leaf-margins serrate or almost entire.

SALICACEAE

Populus L.

P. alba L., Sp. Pl., ed. 1, 1034 (1753) ; Rechinger f., Fl. Aegaea, 94 (1943).

Without locality, Febr. 24, 1940, *Platt* 410 ; a large tree.

GYMNOSPERMAE

GNETACEAE

Ephedra L.

E. campylopoda C. A. Mey., Vers. Mon. Eph., 73 (1845) ; Rechinger f., Fl. Aegaea, 86 (1943).

Pytiós, July 3, 1939, *Platt* 314 ; on rocks ; shrub 9 ins. high with yellow flowers.

CONIFERAE

CUPRESSACEAE

Juniperus L.

J. oxycedrus L., Sp. Pl., ed. 1, 1038 (1753) ; Rechinger f., Fl. Aegaea, 82 (1943).

Amádhēs, Pytiós area, June 5, 1939, *Platt* 590 ; shrub 4 ft. high.

ABIETACEAE

Pinus L.

P. brutia Ten., Prodr. Fl. Nap., 1, LXXII (1811) ; Rechinger f., Fl. Aegaea, 85 (1943).

Without locality, Febr. 28, 1940, *Platt* 409 ; tree 30 ft. high.

MONOCOTYLEDONES

ORCHIDACEAE (det. V. S. Summerhayes)

Limodorum L. C. Rich.

L. abortivum (L.) Sw. in Kongl. Vet. Akad. Handl., 21, 242 (1799) ; Renz in Rechinger f., Fl. Aegaea, 843 (1943).

Orchis abortiva L., Sp. Pl., ed. 1, 943 (1753).

Nea Moní, May 4, 1939, *Platt* 201 ; under pine trees ; herb 1½ ft. high with deep lavender-blue flowers. Also at Amádhēs, below village.

CEPHALANTHERA L. C. Rich.

C. EPIACTOIDES Fisch. et Mey. ; Renz in Rechinger f., Fl. Aegaea, 842 (1943).

Volissós, ca. 450 m., *Renz* 716.

Orchis L.

- O. anatolica** Boiss., Diagn., 1, 5, 56 (1844) ; Renz in Rechinger f., Fl. Aegaea, 832 (1943).

Amádhēs ; Haghiōs Geórgios Sykoúsis, March 29, 1939, *Platt* 37 ; slopes in sun, and rocky places ; herb 3–9 ins. high with crimson flowers.

- O. coriophora** L. ssp. **fragrans** (Poll.) Camus, Mon. Orch. Eur., 136 (1908).

O. fragrans Poll. Elem., 2, 155 (1811).

O. coriophora L. var. *fragrans* (Poll.) Boiss., Voy. Bot. Esp., 2, 593 (1841).

Kampiá, also by mountain stream above Víki, May 26, 1939, *Platt* 271 ; moist places ; herb 6–9 ins. high with purple flowers.

- O. ITALICA* Poir. ; Renz in Rechinger f., Fl. Aegaea, 834 (1943).

Recorded for Chios by *Olivier* and *Bruguère*.

- O. LAXIFLORA* Lam. ; Renz in Rechinger f., Fl. Aegaea, 834 (1943).

Kardhámyla, *Renz* 713.

- O. papilionacea** L., Syst. Nat., ed. 10, 1242 (1759) ; Renz in Rechinger f., Fl. Aegaea, 835 (1943).

Near Amádhēs, March 8, 1939, *Platt* 424 ; on open dry hillsides amongst *Poterium* ; herb 2–6 ins. high ; flowers crimson, with large lip.

- O. provincialis** Balb., Misc. Alt. Bot., 22, t.2 (1806) ; Renz in Rechinger f., Fl. Aegaea, 836 (1943).

Spartóunta, April 18–19, 1939, *Platt* 163 ; under pine trees on sunny hillside below village ; also in pine woods between Víki and Kampiá ; herb 6–9 ins. high.

- O. sancta** L., Sp. Pl., ed. 2, 1330 (1763) ; Renz in Rechinger f., Fl. Aegaea, 838 (1943).

Kampóchora, May 7, 1939, *Platt* 207 ; sunny places ; herb 6 ins. high with purple flowers.

Barlia Parl.

- B. longibracteata** (Biv.) Parl., Nuov. Gen. e Sp. Monoc., 6 (1858).

Orchis longibracteata Biv., Sic. Pl. Cent., 1, 57 (1806).

Himantoglossum longibracteatum (Biv.) Schlecht., Die Orch., 52 (1914) ; Renz in Rechinger f., Fl. Aegaea, 328 (1943).

Haghiōs Geórgios Sykoúsis, March 29, 1939, *Platt* 43 ; amongst stones near a small stream. Also found at lower levels in shade ; herb 12 ins. high with green and mauve flower, uncommon.

Anacamptis, L. C. Rich.

A. pyramidalis (L.) L. C. Rich. in Mem. Mus. Par., **4**, 41 & 55 (1818) ; Renz in Rechinger f., Fl. Aegaea, 828 (1943).

Orchis pyramidalis L., Sp. Pl., ed. 1, 940 (1753).

Without precise locality, May 1, 1939, *Platt* 196 ; shady places ; herb 1-1½ ft. high with pink flowers. Zyfiá, May 30, 1940, *Platt* 507 ; dry banks ; herb 6 ins. high with pinkish-white flowers.

Serapias L.

S. laxiflora Chaub. in Bory et Chaub., Fl. Pelop., 62 (1838) ; Renz in Rechinger f., Fl. Aegaea, 822 (1943).

Kardhámyla, April 11-13, 1939, *Platt* 76 ; cultivated ground ; in low-lying, sunny places ; herb 6 ins. high with crimson purple flowers.

Ophrys L.

O. cornuta Stev. ; Renz in Rechinger f., Fl. Aegaea, 812 (1943).

Haghioi Saranta, ca. 200 m., Renz 409 (sub f. *brevicornis* Renz).

O. fusca Link in Schrad., Journ. Bot., **2**, 324 (1799) ; Renz in Rechinger f., Fl. Aegaea, 815 (1943).

The Kámpos, Febr. 14, 1939, *Platt* 32a ; herb 3-8 ins. high.

O. lutea Cav., Icon., **2**, 46 (1793) ; Renz in Rechinger f., Fl. Aegaea, 817 (1943).

The Kámpos, Febr. 14, 1939, *Platt* 32 ; herb 3-8 ins. high ; labellum yellow with brown centre.

O. spruneri Nym. ; Renz in Rechinger f., Fl. Aegaea, 820 (1943).

Collected in Chios by *Pauli* and *Orphanides*.

O. tenthredinifera Willd., Renz in Rechinger f., Fl. Aegaea, 821 (1943).

Sklaviá [Selavia], *Orphanides* and *Heldreich*.

Gymnadenia R. Br.

G. conopsea (L.) R. Br. ; Renz in Rechinger f., Fl. Aegaea, 840 (1943).

Recorded from Chios by *Pauli*.

Neotinea Reichb. f.

N. intacta (Link) Reichb. f., De Poll. Orch., 18 & 29 (1852) ; Renz in Rechinger f., Fl. Aegaea, 830 (1943).

Kardhámyla, April 11-13, 1939, *Platt* 91.

IRIDACEAE

Iris L.

- I. pumila** L., Sp. Pl., ed. 1, 38 (1753) *sens. lat.* incl. *I. pumila* L. ssp. *attica* (Boiss. et Heldr.) Hayek, Prodr. Fl. Pen. Balc., **3**, 119 (1932); Rechinger f., Fl. Aegaea, 741 (1943).

Haghios Geórgios Sykoúsis, March 19, 1939, *Platt* 45 ; amongst stones, 2–3 ins. high.

This is probably identical with *I. pumila* L. ssp. *attica* (Boiss. et Heldr.) Hayek recorded from Chios (see Fl. Aegaea *l.c.*) but the material is too imperfect for critical determination.

- I. cretensis** Janka in Oesterr. Bot. Zeitschr., **18**, 382 (1868); Rechinger f., Fl. Aegaea, 742 (1943) as *I. cretica* Janka.

Spartoúnta, 1939, *Platt* 20 ; everywhere from sea-level.

Hermodactylus Mill.

- H. tuberosus** (L.) Salisb. in Trans. Hort. Soc. **1**, 304 (1812) ; Rechinger f., Fl. Aegaea, 740 (1943).

Iris tuberosa L., Sp. Pl., ed. 1, 40 (1753).

Without locality or date, *Platt* s.n.

Crocus L.

- C. olivieri** J. Gay in Feruss., Bull. Sc. Nat., **25**, 319 (1832); Rechinger f., Fl. Aegaea, 737 (1943).

Stous Hephtá; above Daphnóna, January 21, 1940, *Platt* 372; on sunny banks ; $1\frac{1}{2}$ ins. high, leaves erect ; flowers yellow with darker shading towards base of corolla-lobes.

- C. fleischeri** J. Gay in Feruss., Bull. Sc. Nat., **25**, 319 (1832); Rechinger f., Fl. Aegaea, 737 (1943).

South of Tholopotami, Jan. 15, 1940, *Platt* 371 ; on sunny slope ; herb 2 ins. high with white flowers feathered purple externally.

- ?C. balansae** J. Gay ex Maw in Gard. Chron., **11**, 234 (1879); Rechinger f., Fl. Aegaea, 737 (1943).

Without date or locality, *Platt* s.n.

The single specimen is insufficient for precise determination.

- C. CHRYSANTHUS** Herb. ; Rechinger f., Fl. Aegaea, 738 (1943).

Mt. Plaka above Karyés, 900 m. alt., *Rechinger f.* 5385.

Romulea Maratti

- R. bulbocodium** (L.) Seb. et Maur., Fl. Romana Prodr., 17 (1818) ; Rechinger f., Fl. Aegaea, 739 (1943).

Crocus bulbocodium L., Sp. Pl., ed. 1, 36 (1753).

Without locality or date, *Platt* s.n.

R. BULBOCODIUM (*L.*) *Seb. et Maur.* var. *PYGMEA* *Beg.*; Rechinger f., Fl. Aegaea, 739 (1943).

Collected in Chios by *Olivier*.

R. LINARESII *Parl.* ssp. *GRAECA* *Beg.*; Rechinger f., Fl. Aegaea, 739 (1943).

Collected in Chios by *Olivier*.

R. ramiflora *Ten.* in Att. Acc. Sc. Nap., **3**, 113 (1836); Rechinger f., Fl. Aegaea, 740 (1943).

Kampóchora, 150 m. alt., April 1, 1939, *Platt* 55; stony path in full sun; herb 6 ins. high with purple flowers.

R. columnae *Seb. et Maur.*, Fl. Romana Prodr., 18 (1818); Rechinger f., Fl. Aegaea, 740 (1943).

The Kámpos, Febr. 14, 1940, *Platt* 389; on river bank; herb with white flowers.

Gladiolus *L.*

G. segetum *Ker-Gawl.*, Bot. Mag., **19**, t. 719 (1804); Rechinger f., Fl. Aegaea, 742 (1943).

Without locality or date, *Platt* s.n.

AMARYLLIDACEAE

Narcissus *L.*

N. tazetta *L.*, Sp. Pl., ed. 1, 290 (1753); Rechinger f., Fl. Aegaea, 735 (1943).

Neachóri, Febr. 15, 1940, *Platt* 395; cultivated land; herb 1 ft. high with white and yellow flowers.

The species is evidently cultivated on the island, since some of the material is the "double-flowered" form.

GALANTHUS *L.*

G. GRAECUS *Orph.*; Rechinger f., Fl. Aegaea, 735 (1943).

Mt. Pelinaíon, *Orphanides*.

Sternbergia *Waldst. et Kit.*

S. lutea (*L.*) *Ker.-Gawl.* in Roem. et Schult., Syst. Veg., **7**, 795 (1830); Rechinger f., Fl. Aegaea, 735 (1943).

Amaryllis lutea *L.*, Sp. Pl., ed. 1, 282 (1753).

Without locality or date, *Platt* s.n.

Pancratium *L.*

P. maritimum *L.*, Sp. Pl., ed. 1, 291 (1753); Rechinger f., Fl. Aegaea, 736 (1943).

Without locality or date, *Platt* s.n.

LILIACEAE

Smilax L.

- S. aspera** L., Sp. Pl., ed. 1, 1028 (1753) ; Rechinger f., Fl. Aegaea, 734 (1943).

The Kámpos, Sept. 26, 1939, *Platt* 614. Banks above Neachóri, Sept. 26, 1939, *Platt* 612 ; herb with white flowers.

Asparagus L.

- A. acutifolius** L., Sp. Pl., ed. 1, 314 (1753) ; Rechinger f., Fl. Aegaea, 732 (1943).

No precise locality, June 30, 1939, *Platt* 307 ; rough ground, generally distributed ; herb 1-1½ ft. high with creamy-white flowers.

- A. APHYLLUS** L. ; Rechinger f., Fl. Aegaea, 733 (1943).

Hill west of the town, *Rechinger f.* 5315 b.

Asphodelus L.

- A. microcarpus** Viv., Fl. Cors. Diagn., 5 (1824) ; Rechinger f., Fl. Aegaea, 710 (1943).

The Kámpos area, March, 1939, *Platt* 47 ; everywhere in sun ; herb 2-3 ft. high with pale pink flowers.

Allium L.

- A. reuterianum** Boiss., Diagn., 1, 5, 60 (1844) ; Fl. Or. 5, 238 (1884).

Summit of Pelinaíon, July 12, 1939, *Platt* 350 ; amongst stones ; herb 1-2 ins. high with wine-red flowers.

The type material from Mt. Sipyle is not available for comparison, but the Chian material matches well with Heldreich's specimens from "montes Davros et Stavros Pisidiae" cited by Boissier (Fl. Orientalis l.c.) and Regel (All. Monogr., 49). The species has not hitherto been recorded from Chios or the Aegean.

- A. subhirsutum** L., Sp. Pl., ed. 1, 295 (1753) ; Rechinger f., Fl. Aegaea, 717 (1943).

Nea Moní, May 4, 1939, *Platt* 200 ; dry sunny banks ; herb 6-9 ins. high with white flowers.

- A. subhirsutum** L. var. **graecum** (Urv.) Regel, All. Monogr., 221 (1875).

A. graecum Urv., Enum., 37 (1822).

A. trifoliatum Cyr., Pl. Rar. Regn. Neap., 2, 11 t. 3 (1788) ; Rechinger f., Fl. Aegaea, 718 (1943).

No precise locality, April 30, 1939, *Platt* 183 ; shaded banks or cultivated ground ; herb 1-1½ ft. high with pink flowers.

- A. neapolitanum** Cyr., Pl. Rar. Regn. Neap., 1, 13, t. 4 (1788) ; Rechinger f., Fl. Aegaea, 718 (1943).

The Kámpos, 50 m. alt., March 27, 1939, *Platt* 35 ; rough ground or cultivated land in sun or shade ; herb 12-18 ins. high with white flowers.



FIG. 11. *Allium reuterianum* Boiss. Plant, natural size. Floral analysis $\times 6$.

A. roseum L., Sp. Pl., ed. 1, 296 (1753) ; Rechinger f., Fl. Aegaea, 718 (1943).

No precise locality, April 30, 1939, *Platt* 183 ; shady banks and cultivated ground ; herb 1–1½ ft. high with pink flowers.

A. cyrilli Ten., Fl. Nap., 3, 364 (1824–29) ; Rechinger f., Fl. Aegaea, 718 (1943).

No precise locality, April 24, 1939, *Platt* 176 ; cornfields ; herb 2½ ft. high with greenish-white flowers.

Two of the specimens agree well with *A. cyrilli* Ten., the third is more like *A. nigrum* L. in tepal size and shape but, lacking leaves and bulb, is unfortunately too incomplete for satisfactory determination. The *Orphanides* specimens (no. 841) cited as *A. cyrilli* in Fl. Aegaea are named *A. nigrum* L. at Kew, and agree better with the latter species in leaf and flower. It is just possible that *A. nigrum* and *A. cyrilli* occur on Chios, perhaps intermixed—or, is Regel correct in regarding both as variants of a single species ?

A. sipyleum Boiss., Diagn., 1, 5, 18 (1844) ; Rechinger f., Fl. Aegaea, 719 (1943).

Amádhes, May 31, 1939, *Platt* 231 ; in rocks around and above the village ; herb 3 ins. high with pink flowers.

Apparently not uncommon on the island, it has been recorded from Mt. Aepos by *Orphanides*, from Livádi by *Rechinger f.*, (R. 5292) and from near Kardhámyla by *C. N. Goulímy*.

A. coppoleri Tin., Cat. Hort. Panorm., 275 (1827) ; Rechinger f., Fl. Aegaea, 719 (1943).

Amádhes, June 6, 1939, *Platt* 252 ; stony places ; herb 4–9 ins. high with dirty-white flowers.

Urginea Steinh.

U. maritima (L.) Bak. in Journ. Linn. Soc., 13, 221 (1872) ; Rechinger f., Fl. Aegaea, 723 (1943).

Scilla maritima L., Sp. Pl., ed. 1, 308 (1753).

Without locality or date, *Platt* s.n.

Muscari Mill.

M. COMOSUM (L.) Mill. ; Rechinger f., Fl. Aegaea, 730 (1943).

Hill west of the town, *Rechinger f.* 4319.

M. racemosum Lam. var. **neglectum** (Guss.) Brand in Koch, Syn. Deutsch. Fl., ed. 3, 2497 (1907) ; Rechinger f., Fl. Aegaea, 731 (1943).

M. neglectum Guss. in Ten., Fl. Neap. Syll., app. 5, 13 (1842).

The Kámpos (also Amádhes) March 25, 1939, *Platt* 3 ; on sunny banks, cultivated land, rough ground and rocks throughout the island up to 500 m. alt. ; herb 3–6 ins. high, flowers scented, deep blue, lower portion of inflorescence darkening with age.

M. parviflorum Desf., Fl. Atl., **1**, 309 (1798).

Without locality or date, *Platt* s.n.

M. PULCHELLUM Heldr. et Sart. ; Rechinger f., Fl. Aegaea, 732 (1943).

Collected in Chios by *Pauli*.

Hyacinthus L.

H. orientalis L., Sp. Pl., ed. 1, 317 (1753) ; Rechinger f., Fl. Aegaea, 727 (1943).

Cultivated at Berberáton and said to be naturalized, Feb. 29, 1940, *Platt* 412 ; herb 9 ins. high with lavender-blue flowers.

H. trifoliatum Ten., Fl. Nap., **3**, 376, t. 136 (1824–29).

Bellevalia trifoliata (Ten.) Kunth, Enum., **4**, 306 (1843) ; Rechinger f., Fl. Aegaea, 728 (1943).

The Kámpos and Kampóchora, March 24–28, 1939, *Platt* 25 ; cultivated land ; herb up to 12 ins. high ; flowers deep purple, blue, and biscuit-coloured.

Scilla L.

S. HYACINTHOIDES L. ; Rechinger f., Fl. Aegaea, 723 (1943).

Recorded from Chios by *Orphanides*.

S. bifolia L., Sp. Pl., ed. 1, 309 (1753) ; Rechinger f., Fl. Aegaea, 723 (1943).

Summit of Pelinaíon, April 14–15, 1939, *Platt* 117 ; shady places or growing in shade of bushes with *Cyclamen*, *Crocus* and *Galanthus* ; herb 3–4 ins. high with blue flowers.

S. BIFOLIA L. var. **IVALIS** (Boiss.) Bak. ; Rechinger f., Fl. Aegaea, 724 (1943).

Recorded from Chios by *Orphanides*.

S. autumnalis L., Sp. Pl., ed. 1, 309 (1753) ; Rechinger f., Fl. Aegaea, 724 (1943).

Without locality or date, *Platt* s.n.

Ornithogalum L.

O. ARABICUM L. ; Rechinger f., Fl. Aegaea, 725 (1943).

Mezaria, *Orphanides*.

O. comosum Torner in L., Cent. Pl., **2**, 15 (1765) ; Rechinger f., Fl. Aegaea, 725 (1943).

Kampóchora, May 8, 1939, *Platt* 214 ; herb 9 ins. high with green and white flowers. Amádhēs, June 4, 1939, *Platt* 561 ; herb 3–12 ins. high on rocky ground ; flowers white.

O. fimbriatum Willd., Not. Verh. Nat. Fr. Berl., **3**, 420 (1801); Rechinger f., Fl. Aegaea, 725 (1943).

Amádhēs, April 14-15, 1939, *Platt* 116a; herb 1-6 ins. high; flowers white with green stripe externally.

O. MONTANUM Cyr.; Rechinger f., Fl. Aegaea, 725 (1943).

Recorded from Chios by *Orphanides*.

O. UMBELLATUM L. var. **DIVERGENS** (Bor.) Beck; Rechinger f., Fl. Aegaea, 726 (1943).

Pytiós, *Orphanides*.

O. narbonense L., Amoen. Acad., **4**, 312 (1755); Rechinger f., Fl. Aegaea, 726 (1943).

Kampóchora, May 8, 1939, *Platt* 213; near cultivated ground; herb 2 ft. high with green and white flowers.

Fritillaria L. (det. W. B. Turrill)

F. sibthorpiana (Sm.) Baker in Journ. Linn. Soc., **14**, 275 (1874) *sens. lat.*; Rechinger f., Fl. Aegaea, 721 (1943), including *F. pineticola* O. Schwarz and *F. schliemannii* Sint.

Tulipa sibthorpiana Sm. in Sibth. et Sm., Fl. Graeca, **4**, 25, t. 330 (1823).

Pelinaíon, April 14-15, 1939, *Platt* 118; amongst stones on sunny ridge just below summit; herb with glaucous foliage, 1-2 ins. high, flowers yellow, usually solitary, but sometimes two on a single stem.

F. PINARDII Boiss.; Rechinger f., Fl. Aegaea, 721 (1943).

Recorded from Chios, 3000 ft. alt., *Orphanides*.

Tulipa L.

T. CLUSIANA Vent.; Rechinger f., Fl. Aegaea, 722 (1943).

Recorded from Chios, *Orphanides* 777.

[**T. PRAECOX** Ten.; Rechinger f., Fl. Aegaea, 722 (1943).

Recorded by *Orphanides* (no. 842); the specimens at Kew are not this species, but probably *T. oculus solis* St. Am., listed below].

T. oculus-solis St. Am., Rec. Soc. Agr. Agen., **1**, 75 (1804); Boissier, Fl. Orientalis, **5**, 192 (1882).

T. praecox (non Ten.) Rechinger f., Fl. Aegaea, 722 (1943) p. p. quoad *Orphanides* 842.

The Kámpos; Kampóchora, 1939, *Platt* 22; cultivated ground; herb up to 2 ft. high.

I have not seen genuine material of *T. praecox* Ten. from the Eastern Mediterranean, and most of the material so named appears to be *T. oculus-solis* or closely allied to this species. The Chian material is unfortunately without bulbs and the identification must, in their absence, be regarded as provisional.

Gagea Salisb.

G. peduncularis (Presl) Pascher in Sitz. Deutsch. Nat.-Medic. Ver. Bohm. "Lotos", nr. 5, 114 (1904) ; Rechinger f., Fl. Aegaea, 712 (1943).

Ornithogalum pedunculare Presl, Del. Prag., 150 (1822).

Pelinaíon, April 14-15, 1939, *Platt* 116 ; high up on mountain, amongst stones ; herb 2-3 ins. high with yellow flowers, tepals darker externally.

G. sp. near G. peduncularis (Presl) Pascher l.c.

Kardhámyla, March 6, 1940, *Platt* 418 ; sunny hillside, herb $\frac{1}{2}$ -3 ins. high with yellow flowers.

The existing confusion in the taxonomy of *Gagea* is so great that it would be a disservice to botany to add another name to the swollen list of species. *Platt* no. 418 differs from *G. peduncularis* in having the leaves at the base of the inflorescence $\pm$ opposite, and from *G. arvensis* (Pers.) R. & S. in the very slender habit and few (1-2)-flowered inflorescences. It closely resembles Cyprian material collected by Sintenis and Rigo and regarded (at Kew) as a co-type of *Gagea juliae* Pasch. Unfortunately Pascher's description does not agree at all well with these Cyprian specimens, though it does accord with another sheet of Sintenis and Rigo bearing an identical label. Pascher remarks that the *G. juliae* type material was intermixed with *G. peduncularis*. I suspect that his new species is but a starved form of *G. peduncularis*, whereas the specimens which he regarded as conspecific with *G. peduncularis* may be distinct, or perhaps distinctive variants of *G. peduncularis* or *G. arvensis*.

Lloydia Salisb.

L. graeca (L.) Endl., Gen. Pl., 140 (1836) ; Rechinger f., Fl. Aegaea, 722 (1943).

Anthericum graecum L., Sp. Pl., ed. 2, 444 (1762).

Kardhámyla, April 11-13, 1939, *Platt* 93 ; poor sunny ground in open spaces amongst *Poterium*, *Cistus*, and *Lavandula*.

Colchicum L.

C. sp. nr. C. biebersteinii Stefanoff in Sborn. Bulg. Akad. Sci., 22, 36 (1926) ; ? Rouy in Bull. Soc. Bot. Fr., 52, 644 (1905) ; Rechinger f., Fl. Aegaea, 709 (1943).

Kampóchora, Jan. 3, 1940. *Platt* 368 ; shady slopes ; herb 2 ins. high with white or rarely pinkish flowers. (Also on sunny slopes S. of Tholopotámi).

The specimens differ from *C. biebersteinii sensu* Stefanoff in the corms having persistent subcoriaceous tunics ; and in the few (1-2) rather large flowers. Dr. N. Feinbrun suggests that they may be *C. catacuzenium* Heldr., and they agree with type material of this species, though not with other material so named at Kew. Until the *biebersteinii* complex has been investigated, it seems best to leave the material unnamed.

C. variegatum L., Sp. Pl., ed. 1, 342 (1753) ; Rechinger f., Fl. Aegaea, 709 (1943).

Without locality or date, *Platt* s.n.

[AGAVE AMERICANA L. is recorded (? cultivated) by *Pauli*].

JUNCACEAE

Juncus L.

J. bufonius L., Sp. Pl., ed. 1, 328 (1753) ; Rechinger f., Fl. Aegaea, 744 (1943).

The Kámpos, May 19, 1939, *Platt* 437.

J. articulatus L., Sp. Pl., ed. 1, 327 (1753) p.p. ; Rechinger f., Fl. Aegaea, 745 (1943).

Kardhámyla, June 3, 1939, *Platt* 537 ; ditches, herb 1-1½ ft. high.

J. acutus L. var. **heldreichianus** (Marss.) Heldr., Chlor. Thera, 23 (1899) ; Rechinger f., Fl. Aegaea, 746 (1943).

Kardhámyla, June 3rd, 1939, *Platt* 536 ; ditches etc., herb 1½-2 ft. high.

ARACEAE

Arisarum Targ. Tozz.

Arisarum vulgare Targ. Tozz. in Ann. Mus. Fis. Flor., 2, 2, 66 (1810) ; Rechinger f., Fl. Aegaea, 845 (1943).

Arum arisarum L., Sp. Pl., ed. 1, 966 (1753).

The Kámpos, Jan. 3, 1939, *Platt* 36 ; foot of shady walls, banks, etc., herb 3-6 ins. high, spathe with green and white stripes, spadix brown. Widely distributed in the island.

Arum L.

A. DIOSCORIDIS Sibth. var. SPECTABILE (Schott.) Engl. ; Rechinger f., Fl. Aegaea, 844 (1943).

Recorded from Chios, *Aucher-Eloy* 2676.

A. italicum Mill., Gard. Dict., ed. 8, no. 2 (1768) ; Rechinger f., Fl. Aegaea, 844 (1943).

The Kámpos, May 2, 1939, *Platt* 197 ; cultivated and uncultivated ground in shady places ; herb 18 ins. high with whitish flowers.

Dracunculus Adans.

D. vulgaris Schott, Melet. Bot., 1, 17 (1832) ; Rechinger f., Fl. Aegaea, 845 (1943).

Arum dracunculus L., Sp. Pl., ed. 1, 964 (1753).

Kampóchora, May 19, 1939, *Platt* 215 ; general throughout island ; herb 3 ft. high with purple-black flowers.

ALISMATACEAE

Alisma L.

- A. lanceolatum** *With.*, Bot. Arr. Brit. Pl., ed. 3, **2**, 362 (1796) ;
Rechinger f., Fl. Aegaea, 706 (1943).

Amádhēs, Pytiós area, June 5, 1939, *Platt* 589 ; in running water ; herb
1½–2 ft. high with mauve flowers.

NAIADACEAE

Posidonia Koen.

- P. oceanica** (L.) *Del.*, Fl. Aegypt. Ill., 30 (1812) ; Rechinger f., Fl.
Aegaea, 708 (1943).

Zostera oceanica L., Mantissa, 123 (1767).

Without locality or date, *Platt* s.n.

CYPERACEAE (det. E. Nelmēs)

Cyperus L.

- C. rotundus** L., Sp. Pl., ed. 1, 45 (1753).

Pycnus rotundus (L.) Hayek, Prodr. Fl. Pen. Balc., **3**, 147 (1932),
Rechinger f., Fl. Aegaea, 749 (1943).

Without locality or date, *Platt* s.n.

Scirpus L.

- S. holoschoenus** L., Sp. Pl., ed. 1, 49 (1753).

Holoschoenus vulgaris Link., Enum. Hort. Berol., **1**, 42 (1821) ; Rechinger
f., Fl. Aegaea, 751 (1943).

Near Kampiá, May 6, 1939, *Platt* 267 ; moist, almost peaty bank in
sun ; herb 2 ft. high. The Kámpoś, May 19, 1939, *Platt* 429.
Without locality or date, *Platt* 536a.

- S. maritimus** L., Sp. Pl., ed. 1, 51 (1753).

Bolboschoenus maritimus (L.) Palla in Koch. Syn. Fl. Germ., ed. 3, 2532
(1907) ; Rechinger f., Fl. Aegaea, 752 (1943).

Babýloi, May 28, 1940, *Platt* 480 ; moist ground, herb 1–2 ft. high.
Kardhámyla, June 3, 1939, *Platt* 539 ; herb 1½–2 ft. high.

Carex L.

- C. divisa** *Huds.*, Fl. Angl., 348 (1762) ; Rechinger f., Fl. Aegaea, 754
(1943).

Amádhēs, Pytiós area, June 5, 1939, *Platt* 578.

- C. otrubae** *Podp.* in Publ. Fac. Sc. Univ. Masaryk, no. 12, 15 (1922).

C. vulpina auct. non L., Sp. Pl., ed. 1, 973 (1753).

Kardhámyla, June 3, 1939, *Platt* 528 ; in ditches, herb 9 ins.–2 ft. high.

C. flacca Schreb., Spic. Fl. Lips., App. no. 669 (1771).

C. glauca Scop., Fl. Carn., ed. 2, **2**, 223 (1772) ; Rechinger f., Fl. Aegaea 755 (1943).

Kardhámyla, April 11–13, 1939, *Platt* 90.

C. FLACCA Schreb. var. **CUSPIDATA** (Host.) Asch. et Graebn. ; Rechinger f., Fl. Aegaea, 755 (1943).

Mt. Plaka, 800–1000 m., alt., *Rechinger f.* 5387.

C. distans L., Syst. Nat., ed. 10, 1263 (1759) ; Rechinger f., Fl. Aegaea, 756 (1943).

Kardhámyla, June 3, 1939, *Platt* 535 ; in ditches, herb 1–1½ ft. high.

GRAMINEAE (det. C. E. Hubbard)

Setaria Beauv.

S. verticillata (L.) Beauv., Agrost., 51, (1812) ; Rechinger f., Fl. Aegaea, 807 (1943).

Panicum verticillatum L., Sp. Pl., ed. 2, 82 (1762).

The Kámpos, Oct. 6, 1939, *Platt* 619 ; on cultivated land.

Imperata Cyr.

I. cylindrica (L.) Beauv. var. **europaea** (Anders.) Aschers. et Graebn., Syn. Mitteleurop. Fl., **2**, ab. 2, 37 (1898).

Lagurus cylindricus L., Syst. Nat., ed. 10, **2**, 878 (1759).

Above Zyfiá, May 30, 1940, *Platt* 511.

ANDROPOGON L.

A. DISTACHYUS L. ; Rechinger f., Fl. Aegaea, 807 (1943).

Seen in Chios by *Rechinger f.*

Hyparrhenia Anders. ex Fourn.

H. hirta (L.) Stapf in Prain, Fl. Trop. Afr., **9**, 315 (1918).

Andropogon hirtus L., Sp. Pl., ed. 1, 1046 (1753).

Cymbopogon hirtus (L.) Stapf in Kew Bull., **1907**, 212, Rechinger f., Fl. Aegaea, 808 (1943).

The Kámpos, June 2, 1940, *Platt* 518.

Oryzopsis Michx.

O. miliacea (L.) Aschers et Schweinf. in Mem. Inst. Egypt., **2**, 169 (1887) ; Rechinger f., Fl. Aegaea, 802 (1943).

Agrostis miliacea L., Sp. Pl., ed. 1, 61 (1753).

The Kámpos, May 31, 1940, *Platt* 517 ; on cultivated land.

O. COERULESCENS (Desf.) Richt. ; Rechinger f., Fl. Aegaea, 803 (1943).

Recorded from Chios by *Orphanides* and *Pauli*.

Phleum L.

P. subulatum (Savi) Aschers. et Graebn., Syn. Mitteleurop. Fl., 2, ab. 1, 154 (1899) ; Rechinger f., Fl. Aegaea, 801 (1943).

Phalaris subulata Savi, Fl. Pis., 1, 57 (1798).

Amádhēs, June 4, 1939, *Platt* 548 ; on rough ground.

P. CRYPSOIDES (Lrv.) Hack. ; Rechinger f., Fl. Aegaea, 801 (1943).

Recorded from Chios by *Olivier*.

Agrostis L.

A. semiverticillata (Forsk.) C. Christ. in Dansk. Bot. Arkiv., 4, 12 (1922).

Phalaris semiverticillata Forsk., Fl. Aegypt.-Arab., 17 (1775).

Agrostis verticillata Vill., Prosp. Pl. Dauph., 16 (1779).

Road to Sklaviá, May 29, 1940, *Platt* 490 ; in a ditch.

Polypogon Desf.

P. monspeliensis (L.) Desf., Fl. Atl., 1, 67 (1798) ; Rechinger f., Fl. Aegaea, 797 (1943).

Alopecurus monspeliensis L., Sp. Pl., ed. 1, 61 (1753).

Mármaro, May 26, 1939, *Platt* 272 ; at waterside.

P. maritimus Willd. in Gesell. Naturf. Freund Berl., n.s., 3, 443 (1801) ; Rechinger f., Fl. Aegaea, 797 (1943).

The Kámpos, May 19, 1939, *Platt* 440 ; the Kámpos, May 31, 1940 ; *Platt* 516 ; on cultivated land.

Lagurus L.

L. ovatus L., Sp. Pl., ed. 1, 81 (1753) ; Rechinger f., Fl. Aegaea, 797 (1943).

Without locality or date, *Platt* s.n.

Aira L.

A. elegans Willd. ex Gaud., Agrost. Helv., 1, 130, 355 (1811).

A. capillaris Host, Icon. Gram. Austr., 4, 20, t. 35 (1809) ; Rechinger f., Fl. Aegaea, 794 (1943) non *A. capillaris* Savi (1798).

Without locality or date, *Platt* s.n.

Avena L.

A. sterilis L., Sp. Pl., ed. 2, 118 (1762) ; Rechinger f., Fl. Aegaea, 792 (1943).

Above Stous Hephtá, May 30, 1940, *Platt* 501 ; on stony ground.

GAUDINIA Beauv.

G. FRAGILIS (L.) Beauv. ; Rechinger f., Fl. Aegaea, 793 (1943).

Recorded from Chios by *Orphanides*.

Cynodon Rich.

C. dactylon (L.) Pers., Syn. Pl., 1, 85 (1805); Rechinger f., Fl. Aegaea, 806 (1943).

Panicum dactylon L., Sp. Pl., ed. 1, 58 (1753).

Without precise locality, June 3, 1939, *Platt* 245 ; amongst pebbles on beach.

Arundo L.

A. donax L., Sp. Pl., ed. 1, 81 (1753) ; Rechinger f., Fl. Aegaea, 771 (1943).

The Kámpos, Oct. 28, 1939, *Platt* 618 ; grass 10–15 ft. high.

Cynosurus L.

C. echinatus L., Sp. Pl., ed. 1, 72 (1753) ; Rechinger f., Fl. Aegaea, 777 (1943).

The Kámpos, May 19, 1939, *Platt* 434.

C. ECHINATUS L. var. PURPURASCENS (Ten.) Fiori et Paoli ; Rechinger f., Fl. Aegaea, 777 (1943).

Hill west of the town, *Rechinger f.* 5332.

C. elegans Desf., Fl. Atl., 1, 82 (1798) ; Rechinger f., Fl. Aegaea, 777 (1943).

Without locality or date, *Platt* s.n.

Koeleria Pers.

K. phleoides (Vill.) Pers., Syn. Pl., 1, 97 (1805) ; Rechinger f., Fl. Aegaea, 790 (1943).

Festuca phleoides Vill., Fl. Delph., 7 (1785).

The Kámpos, May 19, 1939, *Platt* 428, 432, 433.

Melica L.

M. minuta L., Mant., 32 (1767) ; Rechinger f., Fl. Aegaea, 773 (1943).

Kampóchora area, on way to Panaghia Krína, May 6, 1939, *Platt* 206.

M. MINUTA L. var. SAXATILIS (Sibth. et Sm.) Hal., Rechinger f., Fl. Aegaea, 774 (1943).

Recorded from Chios by *Orphanides*.

Aeluropus Trin.

A. LITORALIS (Gou.) Parl., Rechinger f., Fl. Aegaea, 775 (1943).

Recorded from Chios by *Pauli*.

Dactylis L.

- D. glomerata** L. var. **hispanica** (Roth) Desv., Obs. Pl. Angers, 58 (1818).
D. hispanica Roth, Cat. Bot., **1**, 8 (1797); Rechinger f., Fl. Aegaea, 775 (1943).

Above Zyfiá, May 30, 1940, *Platt* 508.

Briza L.

- B. maxima** L., Sp. Pl., ed. 1, 70 (1753); Rechinger f., Fl. Aegaea, 774 (1943).

Kardhámyla, April 11–13, 1939, *Platt* 82.

- B. MINOR** L.; Rechinger f., Fl. Aegaea, 775 (1943).

Recorded from Chios by *Pauli*.

- B. HUMILIS** M. Bieb.; Rechinger f., Fl. Aegaea, 775 (1943) (as *B. spicata* Sibth. et Sm. non Burm. f.).

Karyés, 500 m. alt., *Rechinger f.* 5397.

Poa L.

- P. bulbosa** L. var. **vivipara** Koel., Descr. Gram., 189 (1802); Rechinger f., Fl. Aegaea, 779 (1943).

Without precise locality, March 24–28, 1939, *Platt* 6. Spartoúnta, April 18–19, 1939, *Platt* 164.

- P. SILVICOLA** Guss.; Rechinger f., Fl. Aegaea, 780 (1943).

Recorded from Chios by *Pauli*.

Festuca L.

- F. LAEVIS** (Hack.) Richt. var. **HELDREICHII** (Hack.) Richt.; Rechinger f., Fl. Aegaea, 783 (1943).

Mt. Plaka, 900 m. alt., *Rechinger f.* 5376.

- F. sp.** (sect. *ovinae*).

Amádhēs, June 4, 1939, *Platt* 572, 573.

Vulpia Gmel.

- V. ciliata** Link, Hort. Berol., **1**, 147 (1827); Rechinger f., Fl. Aegaea, 785 (1943).

Amádhēs, Pytiós area, June 5, 1939, *Platt* 577.

Scleropoa Griseb.

- S. rigida** (Jusl.) Griseb., Spic. Fl. Rum. **2**, 431 (1844); Rechinger f., Fl. Aegaea, 786 (1943).

Poa rigida Jusl. in L., Cent. Pl., **1**, 5 (1755).

The Kámpos, May 19, 1939, *Platt* 435.

Bromus L.

B. diandrus Roth., Bot. Abh., 44 (1787) ; ? Rechinger f., Fl. Aegaea, 758 (1943).

B. gussoni Parl., Pl. Rar., 2, 8 (1840).

The Kámpos, Febr. 15, 1940, *Platt* 391 ; on cultivated ground.

B. madritensis Jusl. in L., Cent. Pl., 1, 5 (1755) ; Rechinger f., Fl. Aegaea, 759 (1943).

The Kámpos, May 19, 1939, *Platt* 431.

B. sterilis L., Sp. Pl., ed. 1, 77 (1753) ; Rechinger f., Fl. Aegaea, 760 (1943).

The Kámpos, May 19, 1939, *Platt* 439.

B. macrostachys Desf. var. **lanuginosus** (Poir.) Boiss., Fl. Or., 5, 652 (1884) ; Rechinger f., Fl. Aegaea, 761 (1943).

Without locality or date, *Platt* 510a.

B. intermedius Guss., Prodr. Fl. Sic., 1, 114 (1827) ; Rechinger f., Fl. Aegaea, 761 (1943).

Above Zyfiá, May 30, 1940, *Platt* 510.

Brachypodium Beauv.

B. ramosum (L.) Roem. et Schult., Syst. Veg., 2, 737 (1817) ; Rechinger f., Fl. Aegaea, 763 (1943).

Bromus ramosus L., Mantissa, 34 (1767).

Above Zyfiá, May 30, 1940, *Platt* 509.

B. distachyon (L.) Beauv., Agrost., 155 (1812) ; Rechinger f., Fl. Aegaea, 763 (1943).

Bromus distachyus Torn. in L., Cent. Pl., 2, 8 (1756).

Rocks at Stous Hephtá, May 30, 1940, *Platt* 500.

Lolium L.

L. perenne L., Sp. Pl., ed. 1, 83 (1753) ; Rechinger f., Fl. Aegaea, 788 (1943).

The Kámpos, May 19, 1939, *Platt* 436.

Agropyron Gaertn.

A. sp. aff. A. junceo (L.) Beauv., Agrost., 146 (1812).

Kondári, June 2, 1940, *Platt* 520 ; on sand-dunes.

HAYNALDIA Schur.

H. villosa (L.) Schur. ; Rechinger f., Fl. Aegaea, 768 (1943).

Hill west of the town, observed by *Rechinger f.*

Aegilops L.

A. biuncialis Vis., Fl. Dalm., **3**, 344, t. 1 (1852) ; Rechinger f., Fl. Aegaea, 767 (1943).

The Kámpos, May 19, 1939, *Platt* 438.

A. UMBELLULATA Zhuk. ; Rechinger f., Fl. Aegaea, 767 (1943).

Recorded from Chios by *Orphanides*.

A. CAUDATA L. ; Rechinger f., Fl. Aegaea, 767 (1943).

Recorded from Chios by *Rechinger f.*

Hordeum L.

H. bulbosum Torn. in L., Cent. Pl., **2**, 8 (1756) ; Rechinger f., Fl. Aegaea, 769 (1943).

The Kámpos, May 19, 1939, *Platt* 441.

H. MARITIMUM With. ; Rechinger f., Fl. Aegaea, 769 (1943).

Recorded from Chios by *Orphanides*.

H. hystrix Roth, Cat. Bot., **1**, 23 (1797).

H. gussoneanum Parl., Fl. Pal., **1**, 246 (1845) ; Rechinger f., Fl. Aegaea, 769 (1943).

Moist ground, Babýloi, May 28, 1940, *Platt* 479.

H. leporinum Link in Linnaea, **9**, 133 (1835) ; Rechinger f., Fl. Aegaea, 769 (1943).

The Kámpos, May 19, 1939, *Platt* 430.

PTERIDOPHYTA

FILICES

POLYPODIACEAE

ASPLENIUM L.

A. TRICHOMANES L. ; Rechinger f., Fl. Aegaea, 78 (1943).

Recorded from Chios by *Orphanides*.

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Plant Pests.*—It is often very difficult for the inexperienced eye to be able to judge correctly whether planting material is infected with a disease or harbouring a pest. The above booklet will help considerably in this respect as it is illustrated by 83 carefully selected photographs showing the most important diseases and pests commonly found on dormant or semi-dormant nursery stock, bulbs, etc. The plants are dealt with in alphabetical order of their common English names. Though intended primarily as a guide for officials who are required to inspect plants being exported or imported, the booklet should also be very helpful to commercial growers and nurserymen and indeed to all who buy or sell plants. It is a handy pocket size strongly bound in boards.

Future editions should correct a notable error on p. 25 where "*Phoenix kentis*" presumably stands for "*Phoenix, Kentia*".

R. W. G. DENNIS.

Commercial Hardwoods.†—Within recent years there has been a considerable increase in the number of unusual timbers entering the British market and consequently a demand has arisen for readily available information concerning these "new" timbers.

The author has selected one hundred hardwoods which he considers are likely to be of the greatest interest to those who require a general knowledge of commercial timbers. Both "new" and "traditional" species are included, thus enabling comparisons to be made with the aid of the concise information provided for each timber under the following headings: botanical identity; alternative names, geographical distribution, general description, hand-lens identification features, durability, working qualities, and recommended uses.

The one hundred photographs are unmagnified illustrations of the machine-planed woods, all of unspecified longitudinal faces.

S. G. HARRISON.

* Diseases and Pests on Horticultural Planting Material. P. Aitkenhead & J. A. Tomlinson. iv + 38 pp. 1953. H.M. Stationery Office. 6/-.

† Commercial Hardwoods. Their Characteristics, Identification and Utilization, by Nicholas Clifford, Sir Isaac Pitman & Sons, Ltd., London, pp. 145; 100 photographs, 1953, 21/-.